Computing Scheme of Work & Planning 2016

Knowsley City Learning Centres

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Contents

Introduction

As of September 2014, ICT will be replaced by a new subject - Computing. The national curriculum for Computing aims to ensure that all pupils:

- Can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation.
- Can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems.
- Can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems.
- Are responsible, competent, confident and creative users of information and communication technology.

(Department for Education, 2013)

Knowsley City Learning Centres were commissioned by Knowsley's Leadership Hub to produce a Computing scheme of work in order to facilitate the implementation of the Computing curriculum across Key Stages 1&2. The scheme sets out a plan for each the delivery of the new Computing Curriculum for an academic year and includes:

- Six-week lesson outlines for Reception to Year 6 classes.
- Teacher Guides and video tutorials to support teachers who may not be familiar with the apps/software recommended.
- Details of all the resources you will need to deliver the projects
- It has been linked against the national computing curriculum objectives.
- Cross curricula links for each plan is included.
- An assessment booklet which follows the pupil through their time in school to monitor progress.

We have produced this Scheme of Work to act as a working document for all teachers so you can edit/annotate/adapt it to suit your needs. The scheme sets out lesson plans for the academic year in order to meet the criteria of the Computing Curriculum. It has been designed to be flexible so that schools are able to adapt our scheme to the topics they are delivering.

Knowsley CLCs offer a wide range of services and expertise that support teaching and learning using existing and emerging technologies. Our delivery has been informed through our experiences of working within Knowsley's schools and continuously evolves to meet the demands of our schools.

To find out more about Knowsley City Learning Centres, please visit us at www.knowsleyclcs.org.uk or contact us on 0151 443 2155 or email knowsley.clcs@knowsley.gov.uk.

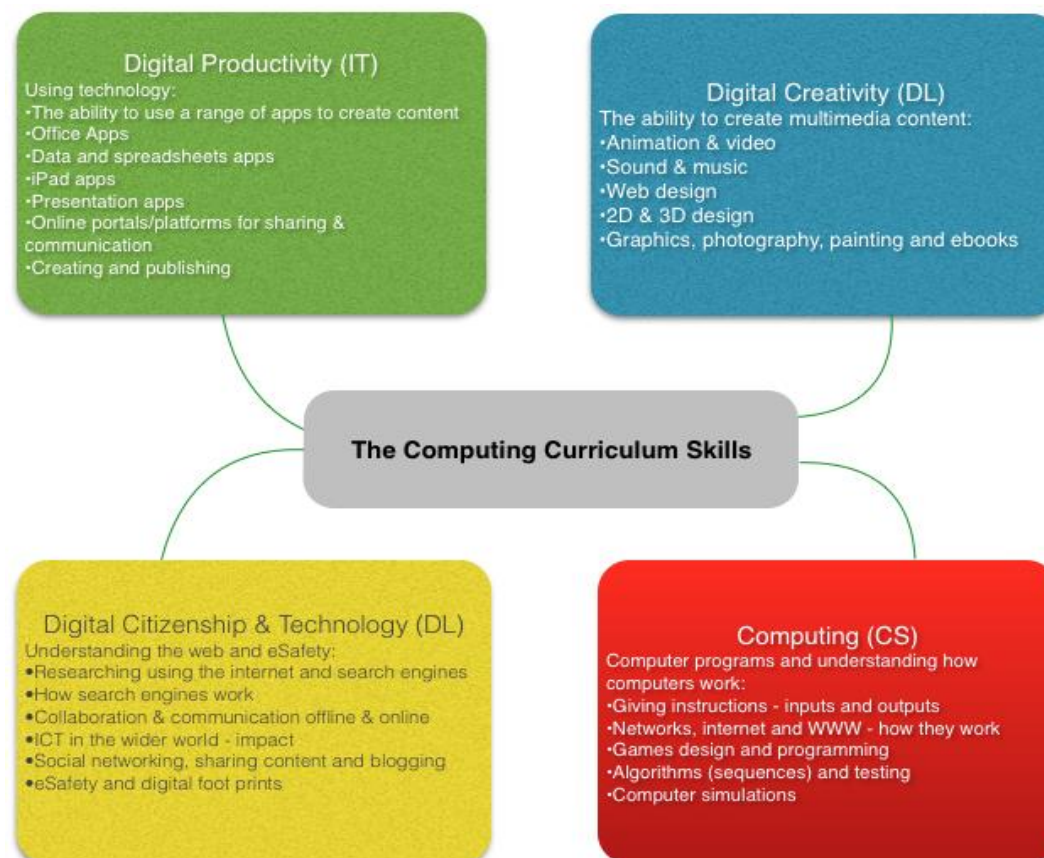## Computing Scheme of Work & Planning 2016 – Key Stage 1 and Key Stage 2

What is Computing? Computing is the new ICT and can be divided into 3 areas: Computer Science, Information Technology and Digital Literacy (which includes eSafety). We have then categorised the aims for the new computing curriculum as identified in the Programme of study issued by the Department for Education into these three areas, detailed below.

Area	Key Stage 1 Aims	Key Stage 2 Aims
Computer Science (CS)	1. Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions 2. Create and debug simple programs 3. Use logical reasoning to predict the behaviour of simple programs	4. Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts 5. Use sequence, selection, and repetition in programs; work with variables and various forms of input and output 6. Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs 7. Understand computer networks including the internet; how they can provide multiple services, such as the World Wide Web 8. Appreciate how [search] results are selected and ranked
Information Technology (IT)	1. Use technology purposefully to create, organise, store, manipulate and retrieve digital content	2. Use search technologies effectively 3. Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information

Area	Key Stage 1 Aims	Key Stage 2 Aims
Digital Literacy (DL)	1. Recognise common uses of information technology beyond school 2. Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies	3. Understand the opportunities [networks] offer for communication and collaboration 4. Be discerning in evaluating digital content 5. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

Computing Scheme of Work & Planning 2016 – Key Stage 1 and Key Stage 2

For the purposes of our scheme of works we have broken digital literacy into two areas, Digital Creativity and Digital Citizenship & Technology. The reason for this is simple, it is to ensure that we cover each of the areas of what is a vast subject area and offer a balanced curriculum to our children. This is demonstrated in the diagram below, this time instead of linking to the programme of study we have given examples of skills children will develop in covering these topics. We hope this will allow teachers to make the link between the programme of study and our scheme of work.

Digital Productivity (IT)
Using technology:
• The ability to use a range of apps to create content
• Office Apps
• Data and spreadsheets apps
• iPad apps
• Presentation apps
• Online portals/platforms for sharing & communication
• Creating and publishing

Digital Creativity (DL)
The ability to create multimedia content:
• Animation & video
• Sound & music
• Web design
• 2D & 3D design
• Graphics, photography, painting and ebooks

The Computing Curriculum Skills

Digital Citizenship & Technology (DL)
Understanding the web and eSafety:
• Researching using the internet and search engines
• How search engines work
• Collaboration & communication offline & online
• ICT in the wider world - impact
• Social networking, sharing content and blogging
• eSafety and digital foot prints

Computing (CS)
Computer programs and understanding how computers work:
• Giving instructions - inputs and outputs
• Networks, internet and WWW - how they work
• Games design and programming
• Algorithms (sequences) and testing
• Computer simulations

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Computing Scheme of Work & Planning 2016 – Key Stage 1 and Key Stage 2

The aim is to have six dedicated Computing units per academic year (plus an additional one for Digital Citizenship & Technology (DL) with a strong focus on e-safety). This is to allow more time for the application of Digital Literacy skills in other areas of the curriculum. Because there is now less content in the Computing curriculum, children should have more opportunities to use technology to support their learning in literacy, maths, and all the other areas of the school curriculum.

It is important to recognise however that some aspects of traditional ICT are still required to be taught discretely and should not be forgotten:
- in KS1, children should be taught to: "use technology purposefully to create, organise, store, manipulate and retrieve digital content";
- in KS2, children should be taught to: "select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information".

An example whole school plan is shown below, with a summary of each of the projects on the following pages and then detailed lesson plans for each 'apptivity'.

Year Group	eSafety	Autumn	Spring	Summer
Reception	Digital Citizenship & Technology (DL) Lv1	Little Computers (CS) Let's Celebrate (DL)	A is for Algorithm (CS) Art Attack (DL)	Junior Explorers (CS) Fantastic Tales (DL)
Year 1	Digital Citizenship & Technology (DL) Lv1	We are all Connected (CS) Pictures Tell a Thousand Words	Walking with Dinosaurs (CS) Our Local Area (IT, DL)	App Attack - Games Design (CS) Pictures Tell a Thousand Words
Year 2	Digital Citizenship & Technology (DL) Lv1	You've got mail (CS, IT, DL) Whatever the Weather (IT)	Code-tastic (CS) Super Sci-Fi (IT, DL)	Let's Fix IT (CS) Vehicles (IT, DL)
Year 3	Digital Citizenship & Technology (DL) Lv2	Big Robots (CS) Get Blogging (CS, IT, DL)	We love Games (CS) Class Democracy (IT, DL)	Young Coders (CS, IT) We are Publishers (DL)
Year 4	Digital Citizenship & Technology (DL) Lv2	Back to the Future (CS) Heroes (CS, IT)	Cars (CS) Hurray for Hollywood (DL)	Interface Designer (CS) Final score (DL)
Year 5	Digital Citizenship & Technology (DL) Lv3	Making Games (CS) Grand Designs (DL, IT)	Maths & Cryptography (CS) Interactive Art Exhibition (DL)	Web Site Designers (CS) Let's change the world: Inventors (CS, DL)
Year 6	Digital Citizenship & Technology (DL) Lv3	Let's learn a language (CS) Heroes & Villains - Graphics (DL)	Appy Times Pt 1 (CS) Around the World (CS, IT, DL)	Appy Times Pt 2 (CS) Young Authors - interactive (IT, DL)

Digital Citizenship & Technology (eSafety) Levels and Activities

Digital Citizenship & Technology (DL) eSafety Level 1 (Reception, Year 1 & 2)	Digital Citizenship & Technology (DL) eSafety Level 2 (Year 3 & 4)	Digital Citizenship & Technology (DL) eSafety Level 3 (Year 5 & 6)
1.1 eSafety Awareness Raising (Video & Class Discussion)	2.1 eSafety Awareness Raising (Video & Class Discussion)	3.1 eSafety Awareness Raising (Video & Class Discussion)
1.2 Sending emails and messages (Maily)	2.2 Communicating On-line and images, Social Networking	3.2 Communicating On-line and images, Social Networking, Sexting, images and grooming (What are you sharing)
1.3 Introducing on-line life and what it is? Including gaming e.g. Minecraft	2.3 Gaming and collaboration	3.3 Gaming and collaboration
1.4 What is Cyber Bullying?	2.4 Cyber Bullying & Report Abuse	3.4 Cyber Bullying & Report Abuse
1.5 Stranger Danger	2.5 Friend or Foe	3.5 Friend or Foe
	2.6 Copy Right, what is it?	3.6 Copy Right, what is it?
	2.7 Passwords & Security (Virus, downloads, pop ups and scams)	3.7 Passwords & Security (Virus, downloads, pop ups and scams)
		3.8 In App Purchases & Mobiles (iPads, Phones etc)

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Overview of Activities (Easy-to-follow mini projects for Foundation, Key Stage 1 and 2):

Key Stage	Apptivity Name	Target Skills & Summary	Computing Curriculum
Rec - 1	Little Computers	Activity explaining what is a computer and its peripherals. Children will make their own computer using junk and develop basic computer skills through playing a variety of games.	IT & DL
Rec - 2	Junior Explorers	Children will learn to give sequences of instructions to control Bee-Bots (floor robot). Children will understand that instructions need to be given in a correct order.	CS
Rec - 3	A is for Algorithm	This unplugged activity will demonstrate to children the importance of sequencing by breaking down popular stories into individual elements so children can see the importance of following a sequence. Children will gain an understanding of the term Algorithm.	CS
Rec - 4	Art Attack	Children will experiment with different drawing apps and software across a range of devices whilst being introduced to different styles of digital art. This activity will show children how to find images using the web.	DL
Rec - 5	Fantastic Tales	This is a cross curricula activity with links to both Literacy and Art. Children will learn a popular tale and then re-tell the story by producing their own animation.	DL
Rec - 6	Let's Celebrate	This apptivity should be ideally delivered around the Christmas period as it can be directly linked to "writing an email to Santa". The aim is teach children about sending their first email and the rules that they should be aware of when communicating digitally.	IT & DL
Y1 - 7	Walking with Dinosaurs	By the end of this project, children will fully understand the term algorithm and will be able to use a simple app on an iPad to reinforce this learning.	CS
Y1 - 8	Pictures Tell a Thousand Words	This project will teach children about the main functions and buttons of a digital camera as well as about different shots. Children will see how important images can be by looking at well-known picture books such as The Snowman.	DL

Key Stage	Apptivity Name	Target Skills & Summary	Computing Curriculum
Y1 - 9	App Attack - Games Design	The aim of this apptivity is to introduce children to the simple concepts of games design as well as notions of sequencing, computational thinking, directional language and problem solving.	DL & IT
Y1 - 10	Crazy Creatures	Throughout this project, children will further develop their understanding of control, directional language and programming, by programming a Bee-Bot and using appropriate control apps.	CS
Y1 - 11	Young Investigators	In this apptivity, children will learn how to search on the internet in relation to a specific topic to develop basic web skills. The children will use Thinglink to produce and publish an interactive image.	IT & DL
Y1 - 12	We are all Connected	The aim of this apptivity is to show children how the web works. The children will produce a simple eBook or presentation incorporating the key terminology they learn from this session.	CS & DL
Y1 - 101	Our Local Area – NEW 2016	In this computing activity we will be using technology to help us explore our local area. It uses investigative tasks to introduce children to the idea of looking at their local area with the aid of technology.	DL & IT
Y1 - 102	Ready, Steady, Go – NEW 2016	In this computing activity, children will learn about algorithms to produce their own simple game.	CS & IT
Y2 - 13	You've got mail	The aim of this apptivity is to help children explore how they can use email to communicate with real people within their schools, families, and communities.	IT & DL
Y2 - 14	Super Sci-Fi	This space inspired project starts by children creating a simple space invader game to then creating a game using advanced settings. The children will also learn about mnemonics and create their own interactive quiz as well as bring Neil Armstrong to life retelling his story.	DL & IT
Y2 – 15	Whatever the Weather	This apptivity will get children looking at data, how it can be presented and interpreted. Children will have to gather the data and then select the most appropriate method to display the data they have captured.	IT
Y2 – 16	Code-tastic	Introduction to the language of code. Children will use a variety of programming apps/software to give them a practical understanding of how computer programs actually run.	CS

Key Stage	Apptivity Name	Target Skills & Summary	Computing Curriculum
Y2 – 17	Young Authors	This apptivity will take the children on a technological journey and show them how technology has advanced over the years. This project will culminate in the children creating their own eBook.	DL & IT
Y2 – 18	Let's Fix IT	Using Scratch, this apptivity will challenge children to analyse simple computer programs and by identifying any errors within the code, they can find a solution.	CS
Y2 – 201	Vehicles – NEW 2016	In this computing activity we will researching, designing and building our own vehicles. The children will then produce their own advert to showcase their amazing creations.	DL & IT
Y2 – 202	Mythical Creatures – NEW 2016	The children will learn about the history of and different types of animation. They will firstly produce a story about their made up mythical creature and then create their animation out of Clay/Plasticine or Paper using Animate it.	IT
Y3 – 19	Get Blogging	Children will develop an understanding of how wikis work and will create their own wiki in small groups encouraging collaborative writing. Children will also review examples of blogs online, learn the basic elements of creating a blog and will then create their very own.	IT & DL
Y3 - 20	We are Publishers	Children will create an eBook retelling the story of a famous book including illustrations that they will create themselves using Brushes	IT & DL
Y3 - 21	Class Democracy	Children will be introduced to the concept of democracy. Children will create their own bill for proposed legislation and create an animation and an endorsement to support their bill.	IT & DL
Y3 - 22	We love Games	In this apptivity children will use gaming apps to develop computational thinking skills and develop a simple program as a final project.	CS & IT
Y3 - 23	Big Robots	The project will reinforce an understanding of directional language and programming. The final lesson will provide children with the opportunity to write their own algorithm by creating a flowchart.	CS
Y3 - 24	My First Program	This lesson plan will take you through the necessary steps to guide children in creating their very first computer game in Scratch.	CS & IT

Key Stage	Apptivity Name	Target Skills & Summary	Computing Curriculum
Y3 - 301	Going for Gold – NEW 2016	Children will create a "My body, My fitness" e-book, which will document each week a personalised "Going for Gold" record.	DL & IT
Yr 3 - 302	Young Coders – NEW 2016	In this computing activity we will experimenting with a range of computer science activities.	CS & IT
Y4 - 25	We built this city	This Apptivity will encourage children to create their own 3D world using Minecraft.	CS & DL
Y4 - 26	Final score	Working in groups, the children will create their own sports news report which they will share and work on together online using iWork or Google Docs.	DL & IT
Y4 - 27	Back to the Future	In this project, children will create their own blog detailing what they learn from researching about different technologies, inventors and the different components of a computer.	CS & IT
Y4 - 28	Making Games	This lesson plan will take you through the necessary steps to create your very first computer game in Scratch.	CS & IT
Y4 - 29	Hurray for Hollywood	The children will devise their own characters, plot and storyboard before filming a short movie which they will then edit in iMovie.	DL
Y4 - 30	Interface Designer	HTML is the language used to create files which can be read by internet browsers to display web pages on the internet. In this lesson, children will build a basic web page using tags and elements to change the design and the colour of the web page.	CS & IT
Yr 4 - 401	Heroes – NEW 2016	In this computing activity, children will blend creative writing and coding to produce their own interactive animations.	CS & IT
Yr 4 - 402	We've got the Power – NEW 2016	In this computing activity we will be exploring the power of social media as a force for good. We will ask children to start a campaign to correct one of the many wrongs in our world and use social media to gain support and gather momentum for their cause.	IT & DL

Key Stage	Apptivity Name	Target Skills & Summary	Computing Curriculum
Y5 - 31	Cars	This lesson plan will take you through the necessary steps to create a detailed 2 player game that includes racing cars around a track.	CS & IT
Y5 - 32	Website Designers	A six-week lesson plan to guide children in creating their own website using free templates from WordPress.	CS & IT
Y5 - 33	News Room	A six-week lesson plan to guide children in creating their own news report.	DL & IT
Y5 - 34	Interactive Art Exhibition	The aim of this apptivity is to introduce children to the amazing world of Augmented Reality (AR. AR is a technology that superimposes a computer-generated image or video on a user's view of the real world.	IT & DL
Y5 - 35	Code Breakers	A computer uses binary codes to function, it is the fundamental language of a computer. This apptivity has been developed to introduce children to this concept and how codes can be deciphered.	CS
Y5 - 36	Let's change the world: Inventors	This project will culminate with children creating their own animation using I Can Animate. The children will create their own props and sets and will also learn how to edit their final piece in iMovie.	DL & IT
Y5 - 501	Grand Designs –NEW 2016	Over six sessions, children will be exploring drawings/illustrations representing both 2D and 3D worlds.	DL & IT
Y5 - 502	Earth and Space – NEW 2016	In this apptivity children will be exploring the earth and space using technology. The apptivity is designed so children look at all the different aspects of space.	CS, IT & DL
Y6 - 37	Young Authors	During this project, children will develop a story idea in small groups to create a storyboard. The children will then use Book Creator and Brushes to create their own eBook including text, illustrations and audio.	IT & DL

Key Stage	Apptivity Name	Target Skills & Summary	Computing Curriculum
Y6 - 38	Stocks and Shares	This apptivity is designed to give children an understanding of the stock market but more importantly engage them in a task that makes them analyse data, make informed choices, present and critique their decisions.	DL
Y6 - 39	Let's learn a language	The aim of this apptivity is to introduce the children to the world of programming languages, of which there are many. They will experiment with learning some basic Python code using either iPads, PC or Macs.	CS
Y6 - 40	Appy Times Pt 1	The children's task is to design a piece of wearable technology that links in with a smart phone app. In this session, the children will also create an advert "selling" their product.	IT
Y6 - 41	Appy Times Pt 2	In this apptivity we will give children the chance to experiment with the basics of programming and app development using a variety of development platforms and styles of code.	IT
Y6 - 42	Heroes & Villains -Graphics	This project will take children through the steps to create their own Heroes and Villains style game using the program Scratch.	CS & IT
Y6 - 601	Building Battle Bots – NEW 2016	The children will use Physics engines and prototyping software to build and test a virtual robot.	CS, IT & DL
Y6 - 602	The Ministery of Crazy Coding – NEW 2016	We will be using Python programming to develop a game. Python is a programming language named after Monty Python the surrealist comedy group. Python's is simple, easy to learn compared with other languages like Java and C++.	CS, IT & DL

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Digital Citizenship and Technology

Summary:

It is important that we educate our children to be safe and responsible whilst using the internet and technology. As part of their education, we need to teach them how to remain safe whilst online and how to use technology both appropriately and effectively. This module will concentrate on creating a society that is well informed about how to protect themselves online whilst promoting the use of technology.

Children are learning that appropriate, respectful ways to communicate are important and this should include digital communications, whether online or offline.

Computing POS Reference:

- **DL1** - Recognise common uses of information technology beyond school
- **DL2** - Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies
- **DL3** - Understand the opportunities [networks] offer for communication and collaboration
- **DL4** - Be discerning in evaluating digital content
- **DL5** - Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

What is required:

Reception: Who Do You Trust Lesson:
- Who can you share information with (flashcards) - Ref R1

Digital Citizenship and Technology: Reception

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
Video and Class Discussion	Make Children aware of some of the risks to using the internet Teach the children about personal information and the we must keep it safe	Discuss with the class what they do on the internet. Discuss what some of the dangers are when they are doing these things online – for example who are they talking to when playing online games? Identify what personal information is and relate this discussion to stranger danger. Use the CEOP Thinkuknow resources, based on Hector's World: http://www.thinkuknow.co.uk/5_7/hectorsworld/ Lesson 1 – personal information is special. Discuss this video with the children and include the following questions: • Why did Ranjeet want to share all of his information? • Why did Hector & Tama stop him from sharing all of his information? • What can the children do to protect themselves? Alternative to Hectors World: Professor Garfield: http://www.schooltube.com/video/b8eece2262604671b347/	Understand what personal information is. To be able to understand the importance of asking for help from an adult when on the internet What do we mean by personal information? Why is personal information special? Who is a trusted adult? Who would you speak to if you needed help on the computer?

Digital Citizenship and Technology: Year 1

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
Video & Class Discussion	Make children aware of some of the risks to using the internet Teach children about personal information and why they must keep it safe	Discuss with the class what they do on the internet. Discuss what some of the dangers are when they are doing these things online – for example who are they talking to when playing online games? Identify what personal information is and relate this discussion to stranger danger. Use the CEOP Thinkuknow resources, based on Hector's World: http://www.thinkuknow.co.uk/5_7/hectorsworld/ Lesson 1 – personal information is special. Discuss this video with the children and include the following questions: • Why did Ranjeet want to share all of his information? • Why did Hector & Tama stop him from sharing all of his information? • What can the children do to protect themselves? Ask the children who they can talk to if they have any concerns when using the internet? Show the following video – Child Focus 'E-Safety': http://www.youtube.com/watch?v=d5kW4pI_VQw Ask the children who can help them to use the internet safely.	To understand what is meant by personal information. To be able to identify what is personal information To know that when they need help online children would speak to a trusted adult. What is personal information? Can you give me an example of some personal information about you?
Who Do You Trust?	Teach children who they can trust to share their personal information with	Recap what is meant by personal information and ask the children to tell you different types of personal information (e.g. name, address, phone number, email Address, clubs they attend). Using flashcards (Ref R1), see if children can identify who it would be safe and unsafe to share their personal information with. For example: Post man, Lollypop man, Doctor, Dentist, Teacher etc.	Children can identify adults they can trust. Who is an adult you trust? Who could you speak to if you need help on the computer?
Sending emails and messages	Children understand what email is and can send a class email	Using the app 'Maily' children can communicate online with each other and the class teacher. Alternative to Maily app - Contribute ideas to a class email and respond to messages together – you could use real life or 'fictitious' characters.	Children are aware that technology can be used for communicating. Who would you send emails to?

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Digital Citizenship and Technology: Year 2

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
Video and Class Discussion	Make Children aware of some of the risks to using the internet Teach the children about personal information and the we must keep it safe	Discuss with children what they do on the internet, lead the discussion towards social networking and online gaming and then discuss who they are talking to or playing against? Do they know about the privacy settings on their online profiles (private (sometimes called personal) and public). Link into stranger danger. Show the following 5 CEOP videos, which focus on keeping personal information private. At the end of each video, spend five minutes discussing the videos with the children. CEOP Thinkuknow resources, based on Hector's World. http://www.thinkuknow.co.uk/5_7/hectorsworld Lesson 1 – personal information is special lesson 2 – not everyone is trustworthy lesson 3 – assessing trustworthiness lesson 4 – being alert to unsafe situations lesson 5 – check with an adult	Children know what is meant by personal information and develop awareness of why it is special. Children understand the need for keeping personal information private – whether online or offline. Children know what to do when concerned about content or being contacted online. What do we mean by personal information? Why should we keep personal information safe?
Introducing on-line life and what it is?	Make children aware of the functionality of the internet – social networks, online gaming, emails etc	Consider what we use the internet for and ask children to identify what they use it for. Emphasise the positive ways in which children can use the internet, to help the children grow up using the internet appropriately. Task: Children to produce a poster promoting the use of the internet and what they like to do while they are on the web. Discuss with children the fact that when we are online we cannot see if what we are doing or saying is making the other person, happy or sad – be nice to people as you would in the real world.	Children know they can use the Internet to communicate with family and friends. What is a social network? What is an email? What is the difference between private and public for our online profiles?
What is Cyber-bullying?	Make children aware of cyberbullying Teach children what cyberbullying	Introduce the children to online bulling – use the following Garfield video to aid discussion: https://learninglab.org/ Task: Children to produce their own set of rules for how they should behave while they are online (think about 'classroom rules' and links between offline and online behaviour)	Children can understand the importance of communicating safely and respectfully online. What do we mean by cyberbullying?

	is and why it wrong	This is an example Poster for Class Displays/promoting the safe use of the internet: http://www.kidsmart.org.uk/downloads/cn_A2posterPRIMARY.pdf	What would you do if you received a nasty message online?

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Digital Citizenship and Technology: Year 3

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
Video and Class Discussion	Teach children about the risks of using the internet	Discuss with children what they do online. Explain some of the risks to using the internet and ask the children who they talk to online and then how do they really know? They will only know if they know them in real life. Use the video below to aid this class discussion: http://www.bbc.co.uk/cbbc/games/beaker-you-choose - select Come alone Carmen	Children develop awareness of online protocols, in order to stay safe on the web. Children learn how to use the internet safely and responsibly
Communicating On-Line, Images and Social Networking	Discuss how children can communicate online. Teach children to communicate appropriately online. Teach children how to protect themselves online.	Discuss with children how the internet can be used to communicate online – both through online games and social networking. Discuss with children the fact that when we are online we cannot see if what we are doing or saying is making the other person, happy or sad so they must be nice to people as you would in the real world. Try to make children aware that there is no difference between the online world and the offline world – there is only one way to behave. Set up your own class blog using Edmodo or WordPress (This links to the Get Blogging Module, Yr3 – Ref 19). Discuss with children 'netiquette' and what are your online rules for your blogging site? Once you have a class blog, talk to the children about their own online profiles and suggest using avatars instead of pictures of themselves. Use the Build your Wild Self website and let children create their own avatar: http://www.buildyourwildself.com/	What is a social network? How old should you be to have a Facebook account? When creating an online profile we choose a setting – the 2P's can you tell me what they are? (Private and Public) Why would you use an avatar rather than an actual picture of yourself? Is there a difference between the online world and the real world?
Cyber Bullying and Report Abuse	To identify cyberbullying and its consequences. Teach children how to report any concerns they have	Talk to children about friendships, introduce bullying and/or cyberbullying to this discussion. In groups or pairs, ask the children to think of 10-15 words they associate with friendship. Ask the groups to feedback and capture that feedback where children can see it. Explain and give examples of online dangers	What is cyberbullying? What would you do if you received a nasty message? Who would you tell if....? How can you protect

	To suggest ways young people can behave positively in cyberspace	or cyberbullying and the consequences of this, such as: • depression • anxiety • feelings of sadness and loneliness • changes in sleep and eating patterns • loss of interest in hobbies • health problems • self-harm or suicide in extreme cases (Source NSPCC, for more information click on the following link: NSPCC Cyberbullying) As a class, brainstorm ideas for how children can keep 'cybersafe' and capture their answers. Ask children to discuss who they can talk to if they have any online concerns e.g. a trusted adult or via the 'Report Abuse' CEOP button.	yourself online?
Gaming and collaboration	Children are able to identify the risks on online gaming and know how to protect themselves.	Class Discussion: Ask the class who plays online games and what games they play. Find out who they are playing against? The answers will fall into one of four categories – the computer, their family, their friends or strangers. Remind the children of Stranger Danger, just because it is on a computer doesn't make any difference. Show them the video in the link below to stimulate class discussion: http://www.youtube.com/watch?v=-nMUbHuffO8 What would the children do if they were sent a nasty message when playing games? Encourage them to report this and not to retaliate – link to cyberbullying session.	Childen are aware of the risks associated with online gaming. Who do you play online games against? Would you share your personal information with the people you play online games with?
Friend or Foe?	Teach children who they can trust and share their personal information with online	Start a discussion by asking questions such as: • Who should we be speaking to online? • Who should we be sharing our personal information with online? It is not about the number of friends but the quality of the friends we have online. What happens to a photograph when we upload it to the internet? – We lose control of it. Emphasise to children that people may not be who they say they are and just because	How do you know if somebody is lying to you online? Who do you speak to online? How do you know whether they are telling you the truth? Who should you trust online? How can you protect yourself when you are online?

23		they tell you something online does not mean it is true. Watch the following cartoons: • Captain Kara and Winston's SMART Adventure (KnowITall), chapter 1, http://www.childnet.com/resources/the-adventures-of-kara-winston-and-the-smart-crew • Captain Kara and Winston's SMART Adventure (KnowITall), chapter 2, http://www.childnet.com/resources/the-adventures-of-kara-winston-and-the-smart-crew • Personal information; Inaccurate information online; Captain Kara and Winston's SMART Adventure (KnowITall), chapter 3, http://www.childnet.com/resources/the-adventures-of-kara-winston-and-the-smart-crew/chapter3	

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Digital Citizenship and Technology: Year 4

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
Video and Class Discussion	Develop children's understanding of online safety Ensure children are aware of the risks of the online world Ensure children are able to protect themselves online	Discuss with the class what they do online and how they think they can stay safe online. The poster below gives guidance on some of the areas you may want to discuss with the children and also gives them some 'SMART' tips for staying safe online: http://www.childnet.com/ufiles/Young-people-and-social-networking-A.pdf Discuss what information children share on the internet and the importance of protecting our personal information online, use the video below to inform this discussion: http://www.bbc.co.uk/learningzone/clips/keeping-your-personal-information-safe-online/5594.html	Children develop awareness of online protocols in order to stay safe on the web. Children learn how to use the internet safely and responsibly What do you use the internet for? Who do you talk to online? What setting do you have your online profiles set to? (Personal or Private)
Communicating On-Line, Images and Social Networking	To identify cyberbullying and its consequences. Teach children how to report any concerns they have To suggest ways young people can behave positively in cyberspace	Discuss with children how they communicate online, for example: • Do you chat via online games • Do you have your own profile on social networking sites? • Who are you talking to online? Ask them to tell you what they are accessing online so you can stay current and up-to-date with what the children are using. Ask the children to access Safety Land to find out what the children have learnt so far. Once they have completed all of the questions they will receive a certificate: http://www.att.com/Common/images/safety/game.html - Watch this cartoon to raise their awareness of the privacy: http://www.friendlyscreens.com/2011/02/22/do-you-have-a-true-private-life-in-social-networks/	Children develop awareness of online protocols, in order to stay safe on the internet Children begin to use a range of online communication tools, such as forums, email and polls in order to formulate, develop and exchange ideas. What is a social network?
Cyber Bullying	Children can	Ask the children what they use the internet for?	Children are able to

and Report Abuse	identify what cyberbullying is Children know how to deal with any cyberbullying issues.	Consider and promote the benefits and advantages of the internet and how we can use it for enjoyment. During this discussion, focus specifically on social networking, what is the purpose of Social Networks (connecting people)? What other ways can social networks be used – news reporting, by businesses to promote products/ services or schools to keep in touch with parents/ carers. Now demonstrate how social networks can be misused by watching this 15 min video from Newsround: http://www.bbc.co.uk/newsround/26136189 Ask children to discuss who they can talk to if they have any online concerns i.e. a trusted adult or via the 'Report Abuse' CEOP button	demonstrates they are able to report unacceptable content and contact when online What is cyberbullying? Why is it wrong? What would you do if you received a nasty message?
Copy Right, what is it?	Introduce children to copyright and explain what it is and why we have it Teach children how to search for copyright free materials	Discuss and explain copyright and plagiarism. Discuss the importance of understanding online research rather than just copying it. Ask children to imagine how they would feel if they put their work online and someone came along, stole all their ideas and claimed that they had made it. Explain that this is particularly important for images/photos and that if they publish their own websites/blogs/use images on social networking sites that are owned by someone else they are breaking the law and could be charged for it. Show children websites where they can get copyright photos, such as: www.compfight.com http://www.morguefile.com/archive Also, consider from their own perspective how many sites, such as Facebook, can use any of the photos they post for their own marketing and advertising purposes.	Children understand that good online research involves processing the information (rather than copying) and interpreting it for others. Children recognise issues of copyright and the importance of acknowledging sources What do we mean by copyright? How can you search for something that is copyright free?
Passwords & Security	Children are able to explain the importance of passwords.	Why do we have passwords? Why do we need to keep our information safe? Who should we tell our passwords to?	As lesson Summary

Digital Citizenship and Technology: Year 5

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
Video and Class Discussion	Make children aware of some of the risks to using the internet. Children are able to reduce the risks of their online behaviour	Discuss with the class what they do online and how they think they can stay safe online. Discuss what information children share on the internet and the importance of protecting our personal information online, use the video below to inform this discussion: http://www.youtube.com/watch?v=_o8auwnJtqE What mistakes does Becky make in this video? Write down each of the childrens answers and then work through each of the answers and ask them what could she have done differently. To finish the session ask the children what they can do to protect themselves.	Children are able to discuss the risks of using the internet and identify ways of protecting themselves. What is meant by a private profile? Who do you speak to line? How do you protect yourself online? What do you do online, which sites do you use?
Communicating On-Line, Images and Social Networking	Children are aware of social networking sites and are able to protect themselves if they choose to use them.	Show the children the video below to act as a catalyst for discussing social networks online: http://www.youtube.com/watch?v=ecr6OJmT3Mg Ask the children to come up with their top tips for staying safe for when they setup online profiles and when they are using social networking sites.	What is a social network? Do you use a social networking site? Who do you speak to? How would you protect yourself when using social networking sites?
Cyber Bullying and Report Abuse	Make the children aware of cyberbullying. Make sure the children are aware who they speak to if they are the victims of	Discuss with children what they understand cyberbullying to be and if they are familiar with the term? Do they know who they can talk to if they are victims of cyberbullying? Are they aware that most online games have a report feature for foul and abusive language? Next show the following video (approx 8mins long). This video highlights the potential impact on a child's life that cyberbullying can have: http://www.digizen.org/resources/cyberbullyin	Children understand what cyberbullying is. Children know how to report any concerns they may have. What is cyberbullying?

	cyberbullying	g/films/uk/lfit-film.aspx - Let's Fight it Together Video	What effect on a child's life can cyberbullying have?
27		Now ask the children for their thoughts on the video. Split the children into groups and ask them to draw up their own 'code of conduct' for using the internet and respecting others online.	
Friend or Foe?	Children are able to identify who they should talk to online	**Class discussion:** Ask the children who they speak to online – whether it's through a social networking site, online gaming site or another site. Do they know everyone they are speaking to, for example when playing online games it's very easy to end up playing against a stranger. If you don't know them how do you know whether they are telling the truth or not? Ask the children to play the game 'Pic your Friends' from the link below: http://www.cybersmart.gov.au/Kids/Have%20Fun/cybersmartaccess.aspx	Who do you speak to online? If you don't know them in real life how do you know they are telling the truth? How can you protect yourself online?
Copy Right, what is it?	Children learn what copyright is and what is meant by plagiarism Children learn that not everything on the internet is true and that they should check several sources to verify information.	Discuss issues of copyright and downloading materials e.g. mp3, images, videos etc and how they should always reference sources when using other peoples work in their own work. Understand the uses of copyright and how they apply to their own work. Split the children into 4 groups and give each group a different hoax website. Some examples are: • GBall www.google.com.au/intl/en/gball • Dog island www.thedogisland.com • Stop alien abductions http://stopabductions.com • Save the mountain walrus http://mountainwalrus.webs.com Add in a true news story but one that is hard to believe, one such as the story below about zig zag traffic lines: http://www.bbc.co.uk/news/blogs-news-from-elsewhere-27036953 If you don't want to use this story there are normally some hard to believe stories available	Children can explain what is meant by copyright What do we mean by copyright? Why do we have copyright? Do you believe everything you read online? How do you know if someone is telling the truth online?

28		at BBC Also in the News: http://www.bbc.co.uk/news/also_in_the_news Ask the children to read the information and record anything that surprises them about what they read. Feedback to the class what they have found out. Reveal to the class that only one of these sites was genuine, this demonstrates to them that people can put anything they like on the internet so although copying from one of these sites may not infringe copyright the information may actually be inaccurate – emphasise the importance of cross referencing what they read online and putting it into their own words.	
Gaming and Collaboration	Children can recognise risks to playing online games and are able to protect themselves.	**Class Discussion:** Who plays online games? Ask the children what games they are playing and on what consoles, this normally encourages them to open up about this topic as they enjoy talking about this topic. Ask them who they play against – their answers will fall into one of four categories – the computer, their family, their friends or strangers. Remind the children of Stranger Danger, just because it is on a computer doesn't make any difference. **Class Teacher:** It may help to read the advice given in the link below to inform this discussion: http://www.microsoft.com/en-gb/security/family-safety/gaming-about.aspx	Who do you play online games against? How can you protect yourself when you are playing online games?

Digital Citizenship and Technology: Year 6

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
Video and Class Discussion	Make children aware of the risks of using the internet.	Show the 'Caught in a Web' video (produced by the BBC): http://www.bbc.co.uk/newsround/13908828 or http://www.youtube.com/watch?v=kgCNGvL0g1g The video is about 15 minutes long and goes through several different themes including: • Bullying • Games addiction • Under 13's pretending to be older • Over 16's pretending to be younger (grooming) Once the children have watched the video, ask them questions such as: • Have you ever heard of this sort of thing happening? To your friends? Younger brothers/sisters? • What do your parents tell you about being safe? Is it sensible or old-fashioned? • Do they understand the technologies they use? Examples? • If you could re-write the advice so that it made sense for your friends what would you say?	Children recognise what is acceptable and unacceptable behaviour when using technologies and online services What did you learn from the video? Which setting should you have your online profiles set to? (Private not Public) Who do you play online games against? What would you do if you received a nasty message? How can you protect yourself online?
Communicating online, Social Networking, Sexting, Images & Grooming	Teach children about social networking sites and appropriate use of such sites. Introduce children to terminology such as 'sexting' and 'grooming'	Discuss with the children what social networks are used within school and what are they used for e.g. communicating with children and parents and for disseminating information. Watch the video short video below which asks do you act correctly when using social networks and will give the children valuable safety tips: http://www.dailymotion.com/video/x11drdh_dos-and-don-ts-when-using-social-networks_tech -	Children understand what is meant by a 'Digital Footprint' Evaluate their use of technology including the use of email, social networking, online gaming and mobile phones and consider how they present themselves online
Cyber Bullying and Report	Teach children	Cyberbullying effects all of us including adults, the video below is an interview with	Children can demonstrate responsible use of

Abuse	what cyberbullying is	musician Cher Lloyd who talks about the effect cyberbullying had on her – 1 minute long http://www.bbc.co.uk/learningzone/clips/singer-cher-lloyd-talks-about-cyberbullying/14129.html Discuss the options for children who are victims of Cyber Bullying who can they talk to? http://www.digizen.org/resources/cyberbullying/films/uk/lfit-film.aspx - Let's Fight it Together Video	technologies and online services, and know a range of ways to report concerns Children understand what cyberbullying is. Children know how to report any concerns they may have. What is cyberbullying? What effect on a child's life can cyberbullying have?
Copy Right what is it?		Discuss issues of copyright and downloading materials e.g. mp3, images, videos etc and reference sources used in their work. Understand the uses of copyright and how they apply to their own work Explore - http://www.museumofhoaxes.com/hoax/photo_database/image/tourist_guy/	Children can explain what is meant by copyright What do we mean by copyright? Why do we have copyright? Do you believe everything you read online? How do you know if someone is telling the truth online?
Gaming and Collaboration	Children can identify the risks to playing online games and know how to protect themselves	**Class Discussion:** Who plays online games? Ask the children what games they play and who they play against– their answers will fall into one of four categories – the computer, their family, their friends or strangers. Remind the children of Stranger Danger, just because it is on a computer doesn't make any difference. Activity: share the guidance in the link below with the children and now ask them to produce their 10 top tips for children when playing online gaming http://www.staysafeonline.org/download/document/316/stc_gaming_tips_for_kids.pdf	What advice would you give other children when playing online games? Do you know who you are playing against?

Further challenges and possible home learning activities:
Not applicable

Alternative Apps/Software to those recommended
Not applicable

RECEPTION

Curriculum Links - RECEPTION:

Activity	Communication & Language	Physical Development	Personal, Social and Emotional Development	Literacy	Maths	Understanding the World	Expressive Arts and Design
Little Computers	X					X	X
Junior Explorers	X		X	X	X	X	
A is for Algorithm	X		X	X	X	X	
Art Attack	X						X
Fantastic Tales	X	X	X	X		X	X
Let's Celebrate	X		X	X		X	

EYFS - Rec (Ref: 1)

Apptivity Name: Little Computers

Summary:

Computers are everywhere and we all need to learn how to use them. But how do they work? In this apptivity, children will begin to learn how to use the computers in their settings and begin to understand what the different parts of a computer are, explain about peripherals and programs. Most of this apptivity is delivered without using a computer, this is called an 'unplugged apptivity'. It is designed to introduce children to the concept of computer programs.

The children will
- Explore the inside of a computer.
- Junk Model their own computer
- Practice basic computer skills using inputs and outputs.

Key Computing Terminology:

Simple Program: A sequence of instructions to perform a task.

Peripherals: These are the external accessories to computers such as printers.

Operating system: The program that enables the computer to start and access different sorts of software on the computer, examples include Microsoft Windows and iOS for Mac.

Memory: This is the name for the electronic holding place for instructions and data that a computer's microprocessor can reach quickly.

Inputs: These are the means of communicating with computers e.g. keyboard and mouse

Outputs: These are the means by which the computer relays information e.g. printer or monitor

CPU: This is the part of the computer that turns your commands in actions

Computing POS Reference:

- DL1 - Recognise common uses of information technology beyond the school
- IT 1 - Use technology purposefully to create, organise, store, manipulate and retrieve digital content

What is required?

Week 1:
- What is a Computer presentation – Ref 1.1
- Access to a laptop/desktop PC
- Post-it notes

Week 2-3:
- Photograph examples of Junk modelling – Ref 1.2
- Cardboard, pots, pens etc.

Week 4:
- Keyboard and mouse control games list - Ref 1.3

Week 5:
- Access to computers, laptops or iPads with a paint package.
- 'Paint packages' presentation – Ref 1.4

Week 6:
- Access to computers, laptops or iPads with a paint package and have a working printer.

eSafety
Not applicable

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Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Become familiar with what a computer is and what they can be used for. Understand that devices respond to commands.	**Class discussion:** What are computers? What can you do with them? What different types are there? 1. Open the resource presentation (ref 1.1) and run through this with the whole class as a carpet time discussion. The presentation will outline the basic workings of a computer. Stress the use of computers as a tool and not just to run content based, or games, software. e.g. Use a word processor to make labels or write a shared note home, use the tools in an art program to create something original, use an art program to design something and make it elsewhere e.g. out of junk. 2. Place a computer or laptop on the carpet with the children and begin to label the computer with post-it notes. Ask the children what they think the different parts do. Sometimes it helps children to teach them skills directly e.g. ask what the buttons on the computer do and then press them to show them.	What computers do you use at home? What does a computer do? What do you use a computer for? What is a mouse? What is a keyboard? What is the monitor?
2	Talk about their use of ICT and other ways of finding information.	*Prior to this task, ask the children to bring in any reclaimed materials such as yogurt pots, cereal and other food boxes, plastic cartons, plastic bottles and milk top lids to create your junk area.* 1. Introduce the children to the 'Junk Modelling' area. This area is where the children use various pieces of 'junk' to create something exciting and original. 2. Tell the children they are going to build their own computer. See example pictures (ref 1.2) using cardboard, pots, pens etc. 3. Record the children giving an oral account of their creations and how they use computers/ICT to do things (this could be video or a photo story with pictures and audio). When recording encourage critical thinking and creativity by asking e.g. I wonder how I….What happens if….Do you have any ideas how I can….I saw and it gave me an idea….Do you remember how you found out this worked, I liked the way you…	What would you use this for? What does this do? Why would we use a computer?
3		Continue and complete work from week 2.	
4	Understand that	**Exploring Inputs!**	What do we

	in addition to touch screens, a keyboard and mouse are tools for navigating a computer and entering text. Play a variety of games that teach mouse control and techniques.	What are inputs? These are simply the means of talking to a computer, the keyboard and mouse are the first that need to be mastered. On the IWB model using a keyboard, identify and match numbers using the SMART board software keyboard with the class. Explain that keyboards have all the letters of the alphabet. However they are capital letters. Show the children how to play the typing games. Set the children the task of playing a variety of games that help them to learn keyboard skills and mouse control and techniques. See Ref 1.3 for a list of games.	mean by input? Can you give me an example of an input?
5	Use a simple paint program to produce a digital drawing.	**Exploring Inputs!** Open using 'paint packages' presentation (ref 1.4) Using a paint package on a computer/laptop or iPad, ask the children to draw a picture of how computers are used. Encourage them to show what they think makes the computer work. Show children how to save their pictures as these will be used in the next session. You could also create a classroom display that explains the different parts of a computer and some of the terminology.	How did you do that? How do you change the colour? What do you press to change the brush stroke?
6	Retrieve and open digital files. Use print function to print work.	**Exploring Outputs!** Ask the children to open their saved work from the previous session and print these out. This session will encourage children to link experiences from one area with another and use computers to produce work. You could ask the children to print off patterns from the computer to use as wrapping paper or print photographs to put in their records or homemade books.	How did you print your work? Why would you print your work?

Further challenges and possible home learning activities:

Send a letter home to parents: This is part of the EYFS curriculum. If their child uses any form of ICT at home (e.g. Nintendo DS, iPad/Tablet, a laptop, a PC, DVD player or CD player), ask them to bring in a photo of it. The photos can then be use to make a classroom display "how we use technology".

Alternative Apps/Software to those recommended
Not applicable

EYFS - Rec (Ref: 2)

Apptivity Name: Junior Explorers

Summary:

Children are already immersed in a programmed world, whatever technology we use it operates via a program which contains algorithms – or more simply a sequence of instructions. This apptivity is aimed at introducing children to the fact that technology works through a sequence of instructions. It is an excellent introduction to teaching control, directional language and simple programming to young children.

Much of this apptivity is delivered without using a computer, it is an 'unplugged apptivity'. It is designed to introduce children to the concept of computer programs. It uses Bee-Bots (or other floor robots) to teach children to control robots using simple instructions to make the robot move.

Children will understand that instructions need to be given in a correct order and children will be able to give simple instructions using directional language and numerical units.

The final lesson will provide children with the opportunity to program a Bee-Bot unaided and annotate a simple program using symbols.

Key Computing Terminology:

Control: In ICT Terms, this means the commands placed in a sequence to perform a desired task.

Directional language: Forwards, backwards, left and right.

Sequencing: A set of actions or events that must be carried out in the same order every time.

Simple Program: A sequence of instructions to perform a task.

Computing POS Reference:

- **CS1 -** Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions
- **CS2 -** Create and debug simple programs
- **CS3 -** Use logical reasoning to predict the behaviour of simple programs

What is required?

Weeks 1 - 2:
- Flash cards - Ref 2.1

Weeks 4 - 6:
- Bee-Bots (or other floor robot)

eSafety
Not applicable

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	What is directional language? Children to become familiar with the terms 'forwards, backwards, left and right'.	Explain to the class that they are going to learn about directions and will explore the words we use to describe them. Play a game with the children to establish their understanding of directions (forwards, backwards, left and right). Show flash cards (Ref 2.1) or point in different directions and ask children to shout out the correct terminology. Explain how forwards and backwards is different to up and down. Discuss with children when we would use instructions, ask them as well as instructions they follow what else do we give instructions for?	What do we mean by direction? What is an instruction?
2	Encourage children to recognise, use and understand directional language. Ensure children can recognise and match the words with the symbol.	Recap on previous lesson. What way is ↑ What way is ↓ What way is ← What way is → Set children a task to match the words to the images. In pairs using the flash cards (Ref 2.1), the child will match the direction their partner is standing in with the arrow and images on the cards.	Children able to recognise, use and understand directional language Children able to match correct words with symbols
3	Reinforce prior learning of directional language and encourage the use of the terminology. Introduce the concept of sequencing.	Recap on prior knowledge of directional language. Play a quick game to reinforce the use of directional language. Explain that the process of giving directions is similar to providing instructions and that instructions need to be in a certain order (sequencing). In pairs, ask the children to direct each other using only the terms forwards, backwards, left and right. Prompts can be placed on walls (with the word and symbol). *It must be*	Children able to recognise, use and understand directional language and begin to sequence instructions. Why do we need instructions? Why is it important to follow instructions? Why is it important to follow

		emphasised when giving instructions that children must turn left or right then move forwards again i.e. rotate their whole body first.	instructions in a particular order? Can you think of an example of when you have given instructions?
4	To program a floor robot.	Introduce children to the Bee Bots (floor turtle). Explain how the Bee-Bot will not move unless we give it certain instructions or commands. Children will learn to complete a programme of single instructions. Children will also master clearing previous programs before starting a new program. *New terminology – 'clear and go'* Extension - Children could make their own pictures to be placed together to create a map. Then direct each other to different areas on their own maps.	Children able to perform a simple program on the floor robot. Why does the floor robot do that? What other devices do we use that need programming?
5	Ensure that children recognise that a set of 'step by step' instructions creates a program.	Recap on prior knowledge of directional language. Play a quick game to reinforce the use of directional language, encourage terminology and highlight the need for sequential order. In pairs, mirror the Bee-Bots sequence using the prompt cards to show a visual simple program.	Children able to recognise that a string of instructions or commands placed together can create a simple program. Without this programme then the robot would not move. What happens when we don't follow the instructions?
6	Program a Bee-Bot unaided and annotate a simple program using symbols.	Extend learning of sequencing by giving multiple instructional demands as opposed to single, using the Bee-Bots. Ask children to write down their programs using the symbols as they direct their Bee-Bot	Children able to program a floor robot without the help of an adult and record (in symbols) the program used. What is an instruction? What do we mean by a sequence? Why is it important to follow instructions?

Further challenges and possible home learning activities:

Children with Tablet devices can download the Bee-Bot app (free).

Ask children to prepare a list of devices they use in their home that they control and then ask the children to talk about these devices and how they control them e.g. TV by using the remote.

Alternative Apps/Software to those recommended

Weeks 4 - 6:
* Any floor robot can be used

EYFS - Rec (Ref: 3)

Apptivity Name: A is for Algorithm

Summary:

Using popular stories is a great way to introduce children to computational thinking and processes. By breaking down a popular tale you can demonstrate to children the importance of sequencing.

By breaking a story down into individual elements and then rearranging them, children can see the importance of following a sequence. For example rearranging the series of events from the Three Little Pigs could see the wolf blowing down a house before it has been built!

This is an 'unplugged apptivity' as it introduces children to computational ways of thinking without using computers.

Key Computing Terminology:

Algorithm: An algorithm is a sequence of instructions and/or set of rules.

Sequencing: A set of actions or events that must be carried out in the same order every time.

Computing POS Reference:

- **CS1 -** Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions

What is required?

Week 1:
- Chosen story e.g. The Hungry Caterpillar (not provided)

Week 2:
- Internet access if using link below.
- Website:
  The Very Hungry Caterpillar by Eric Carle - http://www.youtube.com/watch?v=_4HI7q38VmQ or video provided as Ref 3.1

Week 4:
- Flash Cards - Ref 3.2

eSafety
Not applicable

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Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Introduce children to a story e.g. 'The Very Hungry Caterpillar" By Eric Carle. Identify important components of a book. Children to retell story in their own words.	Begin lesson by introducing a story that you would like the children to retell. Look at the cover of the book – ask the children what they think it is about and what type of story it could be. Ask children to label the different parts of a narrative book – author, illustrator, text, picture and blurb. Read the story of The Very Hungry Caterpillar. Ask children what the story was about in their own words to see if they can remember and identify the main events that happen.	Children are able to identify the main events in the story and understand the different components that make a book What is an author? What is an illustration?
2	Recap story. Identify and describe days of the week, numbers and food.	Watch YouTube clip to recap story or use Ref 3.1. http://www.youtube.com/watch?v=_4HI7q38VmQ Discuss story in more detail. Ask children to count the fruit as it appears on screen. Ask children to say aloud, the days of the week together. Ask the children to tell you which foods that appear are healthy and unhealthy. Ask the children to group all of the red food for example, Apple and strawberries. What happens to the caterpillar after he has eaten all of the food?	Children can identify the main events in a story, sequencing them in chronological order. Children can count to 10 with confidence, recite the days of the week and recognise different fruit. Children can categorise and group together.
3	Children will retell the story and sequence events in chronological order with week day and fruit in order of appearance, using flashcards as visual aids.	Discuss with children the basics elements of making a story. It has to have a beginning, middle and an end. Ask children to retell the story, step-by-step in chronological order. In what order does the caterpillar eat the food? Give children parts and arrange them in a line. This line will visually represent the sequence of events. Mix the children up and then tell the story to highlight the fact that it doesn't make any sense, which is why stories are structured in a certain order. For example, the caterpillar has to eat the food to grow and then sleep in the cocoon so it will transform into a butterfly.	As a group, children can identify the main events in The Very Hungry Caterpillar, sequencing them in chronological order, saying what happens in the beginning, middle and end. Why is it important that the story is told in order? What happens if we mix the story up?
4	Children will retell story and sequence events in	Using flash cards (Resource – Ref 3.2) and working in pairs, ask children to plan out the story in the correct chronological order.	Children can individually identify the main events in The Very Hungry Caterpillar, sequencing

		Leave cards out for kids to do themselves	
	chronological order and put week days and fruit in order of appearance, using flashcards as visual aids.		them in chronological order, saying what happens in the beginning, middle and end.
5	What is an algorithm? To get children familiar with the meaning of algorithms and the need for them to be precise and accurate	Start the lesson by explaining to the children that an algorithm is simply a sequence of instructions and that humans and computers follow algorithms to complete tasks. Or in other words, follow a list of instructions in order to do something, with orders and decisions. Highlight the fact that these algorithms needs to be precise, accurate and in a step by step order, like a story, or they won't make sense. Give examples of algorithms in relation to the story of The Very Hungry Caterpillar: Starts as a hungry caterpillar, decides he needs food, still hungry so eats more food, and again, and again, in this process he is growing, sleeps in the cocoon and then turns into a beautiful butterfly.	Children able to understand and explain the meaning of an algorithm and the importance of order and accuracy. Children able to identify algorithms in everyday life. What does the term algorithm mean? Why is it important that we follow instructions in a sequence?

Further challenges and possible home learning activities:

Children could choose their favourite book and identify the beginning, middle and end.

Alternative Apps/Software to those recommended

Not applicable

EYFS - Rec (Ref: 4)

Apptivity Name: Art Attack

Summary:

The aim of this apptivity is to experiment with drawing apps and software across a range of devices. The children will also learn to find images using the web and be introduced to different styles of digital art. In the first lesson children will be introduced to a selection of artists, you can replace this with the artist of your own choosing if you like.

The children in the following lessons will be set the tasks of drawing their favourite things; favourite food, toy, friend and colour. These drawings can be printed off and used for an exhibition.

Delivery:

We would suggest that this session be delivered to small groups, so that they can be supported when producing their animations.

Key Computing Terminology:

Not applicable

Computing POS Reference:

- **DL1** - Recognise common uses of information technology beyond the school
- **IT 1** - Use technology purposefully to create, organise, store, manipulate and retrieve digital content

What is required?

Week 1:
- Art & Artist presentation – Ref 4.1

Week 2,3,4,5:
- My Favourite Thing presentation – Ref 4.2
- iPads, PC/Mac, drawing tablets and IWB could all be used. Suggested software:
  - iPad app/Mac - Drawing with Carl
  - iPad app - Hello Colour Pencil
  - PC software - 2paint & 2paint a picture
  - http://www.2simple.com/2paintapicture?virtuemart_product_id=97&virtuemart_category_id=4
  - PC software - Revelation Natural Art (Simple) (http://www.r-e-m.co.uk/logo/?Titleno=25343)
  - PC software - RM Colour Magic (http://www.rm.com/_RMVirtual/Media/Downloads/ColourMagic_outer_Final.pdf)
  - PC software – Splosh (http://www.kudlian.net/products/splosh) (£250 site licence)
  - PC software – Dazzle (http://teemeducation.org.uk/primary/art/dazzle-03)

Week 6:
- Video camera or iPad

Extension activity 1:
- QR code creator/reader
- Using QR Code Video – Ref 4.3

Extension activity 2:
- Laptops/iPads with access to the internet.
- http://www.bbc.co.uk/cbeebies/something-special/games/something-special-paintinggame

eSafety
Not applicable

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Understand that there are different styles of art and that pictures can be produced on a computer.	**Class discussion:** Using the Art & Artist presentation (ref 4.1), explain to the class what an artist is and that artists take their inspiration for their art from what is around them and the things that they are passionate about. Ask the class what they know about artists and do they know any works of art? You could link this to places that the children have visited.	What is an artist? Can you use a computer to produce art?
2	Click, draw and drag objects with more control to create a scene.	**My Favourite Things Part 1** Open the 'My Favourite Thing presentation' (ref 4.2). Demonstrate a PC art application with the class. Tell them to draw their favourite food and the place where they would eat it. When they have done this, make them play a game together by guessing what or whom they have drawn. This helps their drawing and colouring skills develop.	Children can draw on a computer. How did you do that?
3	Use a wider range of tools such as flood fill, spray can.	**My Favourite Things Part 2** Open the 'My Favourite Thing presentation' (ref 4.2). Demonstrate an iPad art application with the class. Tell them to draw their favourite toy and themselves playing with it. When they have done this, make them play a game together by guessing what or whom they have drawn. This helps their drawing and colouring skills develop.	What app have you used to do that? How did you do that?
4	Click and drag to draw a recognisable picture/portrait.	**My Favourite Things Part 3** Open the 'My Favourite Thing presentation' (ref 4.2). Demonstrate an iPad art application with the class. Tell them to draw their favourite friend, explain this is called a portrait.	How did you do that? How did you change the colour? How did you change the thickness of the brush?

		When they have done this, make them play a game together by guessing what or whom they have drawn. This helps their drawing and colouring skills develop.	
5	Use a graphics tablet with greater accuracy to draw with abstract shapes.

or

Use a paint program on an IWB with greater control. | **My Favourite Things Part 4**

Open the 'My Favourite Thing presentation' (ref 4.2).

Demonstrate a PC/IWB art application with the class.

Tell them to draw their favourite colour. They must use 4 different shapes and 4 different shades of their favourite colour.

When they have done this, make them play a game together by guessing what or whom they have drawn. This helps their drawing and colouring skills develop. | How did you draw that?

How did you change the colour? |
| 6 | Talk with confidence about media use and techniques used to create digital art. | **My Favourite Things Videos & Exhibition**

Using the class video camera or iPad record short videos of the class working on their digital art. Then also record a little video of the children talking about what they created. Ask the children to write a short script of what they would like to say beforehand.

This can be used to support assessment, uploaded to the school website or used as part of an art exhibition using QR Codes (see extension activity below).

Print off and laminate the children's artwork, then these can be hung outside around the playground as an exhibition. | Children are able to explain how they have produced art using the different programs.

How did you do that?

What app did you do that in? |

Further challenges and possible home learning activities:

Extension 1:
You can also use QR to attach the video you have recorded to the artwork. This means when the QR code is scanned the video will play. If you would like to try this please see the accompanying video resource on QR codes and art (Ref 4.3).

Extension 2:
Use CBeebies to draw a story via website game.
http://www.bbc.co.uk/cbeebies/something-special/games/something-special-paintinggame

Alternative Apps/Software to those recommended

Tux Paint (Free) - http://www.tuxpaint.org/

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EYFS - Rec (Ref: 5)

Apptivity Name: Fantastic Tales

Summary:

There are various ways that stories are retold and brought to life - animation is one of these methods and one that demands children to demonstrate an understanding of the original story but allows them the creativity to put their own interpretation on a classic tale.

This is a cross curricula activity with links to both Literacy and Art. Children will learn a popular tale and then re-tell the story by producing their own animation.

The first part of this 'apptivity' is unplugged and aims to introduce children to computational ways of thinking.

Key Computing Terminology:

Not applicable

Computing POS Reference:

- **DL2 -** Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies

What is required?

Week 1:
- Chosen book (not provided)

Week 2:
- Puppets or photos (not provided)

Week 3:
- Optional activity to use props or create masks (not provided)

Week 4:
- iPads – camera app

Week 5 and 6:
- iPads - Puppet Pals App

eSafety
Not applicable

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Introduce children to a fantastic tale. Identify important components of a book. Children to retell a story in their own words.	Begin the lesson by introducing the story or fantastic tale that you would like the children to retell. Look at the cover of the book – ask the children what they think it is about and what type of story it could be. Ask children to label the different parts of a narrative book – author, illustrator, text, picture and blurb. Next read the chosen story, for example The 3 Little Pigs. Ask children what the story was about in their own words to see if they can remember and identify the main events that happen.	Children can identify the main events in the story and understand the different components that make a book. What is an author? What is an illustration? What do all stories have? (Beginning, middle and an end)
2	Recap story. Identify and describe characters.	Recap main points that the children identified in the story. Ask children to list the characters that appear in the story. For example: 3 pigs, wolf, mummy pig, man with straw, man with sticks or man with bricks. Use puppets or photos and ask children to describe these characters. Write down all describing words that are used. Talk about different materials, colours, shapes – e.g. bricks are strong. Children can act out different characters and use different voices when pretending to be them.	Children can identify the main characters and use describing words to explain their role in the story. What is a character? How would you describe….?
3	Children will retell the story and sequence the events in chronological order and characters in order of appearance.	Discuss with the children the basic elements of making a story. It has to have a beginning, middle and an end. Ask children to retell the story, step-by-step in chronological order. Where do the characters appear in the story? Give children parts and arrange them in a line. This line will visually represent the sequence of events. Mix the children up and then tell the story to highlight the fact that the story now does not make any sense, which is why stories are	Children can identify the main events in fantastic tales, sequencing them in chronological order, saying what happens in the beginning, middle and end. Why is the order of the story important? What happens if we change the order of the story?

		structured in a particular order. Props can be used and masks can be made.	
4	Children to use the camera app on iPads, puppets or previous art work to create story settings and any characters needed.	Before children can start to begin to record their story they need to design any settings or characters. This can simply be a photograph taken on the iPads. Children can draw or paint different backgrounds as part of an Art and Design activity prior to this lesson then use the iPad to photograph their work. In the same way, they could draw or paint characters. Another option could be to make masks. Then children could wear masks while others take a photograph. This way the children will be part of their own stories. Similarly, puppets or stuffed toys could be used.	Children are able to use the camera to take a photograph using an iPad.
5	Children will use iPads to cut out and prepare characters and backgrounds to record the retelling of a story in the specific sequence of events.	Demonstrate Puppet Pals on the whiteboard. Explain to the children that any components they need to include in the story must be saved in the camera roll so they have access to them. Select the character they need and cut around it to remove the background. This will test the child's fine motor skills and needs to be done in one continuous motion without their finger leaving the iPad until the cut is complete. Repeat this process with any other characters that are needed. Import the background they have designed for the setting of the story. Select any backgrounds and characters that are needed for the specific points in the story and experiment with resizing of different characters. For example: Mummy pig will appear bigger than the 3 little pigs. Begin to plan and practice the retelling of the story.	Children will master skills such as removing a background from their desired character. What app did you use? What did you like about the app?
6	Children will use iPads to resize, animate and record audio to retell their own fantastic tale.	Once planning is complete, children are then able to begin recording the retelling of their fantastic tale. Encourage children to move their characters as they are recording audio to	Children are able to record their own voice on an iPad application and play it back. Children are able to manoeuvre and manipulate characters on

		make it seem more lifelike.	screen.
	48	Encourage the use of clear, animated voices for the different characters and use sounds effects. For example: knocking on the table when the wolf is trying to enter the little pig's house will imitate knocking on the door. When recording is complete, save their project and export from Puppet Pals into the camera role to then be viewed and used elsewhere, such as on the school website.	

Further challenges and possible home learning activities:

The children could create their own animations at home – Puppet Pals has a 'lite' version (free) or they could use Toontastic which is also free.

Alternative Apps/Software to those recommended

Week 5 and 6:
- Alternative to Puppet Pals App - 'I Can Animate' (software or app version) or Sock Puppets.
- Alternatively children could create their characters using MS Paint, print the characters out and then record their animation using a flipcam/video recorder.

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EYFS - Rec (Ref: 6)

Apptivity Name: Let's Celebrate

Summary:

This apptivity should be ideally delivered around the Christmas period as it can be directly linked to "writing an email to Santa". The aim is teach children about sending their first email and the rules that they should be aware of when communicating digitally.

The Children will
- Understand that messages can be in pictures, sound and text, and can be sent electronically over distances and that people can reply to them.
- Begin to understand there are rules to help them stay safe when online (see eSafety section).
- With support, type and send a short email from a class account (e.g. a letter to Santa).
- Children explore how they can use email to communicate with real people within their school, families, and community.

Key Computing Terminology:

eMail: This is a digital letter - messages distributed by electronic means from one computer user to one or more recipients via a network.

Computing POS Reference:

- **DL1** - Recognise common uses of information technology beyond the school
- **IT 1** - Use technology purposefully to create, organise, store, manipulate and retrieve digital content

What is required?

Week 1:
- What is an email presentation – Ref 6.1

Week 2:
- How to set up class emails presentation – Ref 6.2
- PC/Laptops or iPads with internet access.
- Website - https://tocomail.com

Week 3:
- Pens, Pencils and Paper
- Email worksheet – Ref 6.3

Week 4:
- Let's get mailing presentation - Ref 6.4
- PC/Laptops or iPads with internet access.
- Website - https://tocomail.com
- iPad app: TocoMail

Week 5:
- PC/Laptops or iPads with internet access.
- Website - https://tocomail.com
- iPad app: TocoMail

Week 6:
- Digital Cameras or iPads
- PC/Laptops or iPads with internet access. Website (https://tocomail.com) iPad app: TocoMail

eSafety
Digital Citizenship & Technology 1.1 & 1.2

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Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Become familiar with what email means.	**What are emails and email addresses? How are they used?** 1. Open the resource presentation (ref 6.1) and run through this with whole class as a carpet time discussion. The presentation will outline the basic concepts of email. 2. Discussions: What is an email? Ask the children: who has heard of an email? Who has seen somebody at home send an email? (They might say which devices their adults / siblings are using to do so e.g. Smartphone, laptop, tablet), has anyone *here* sent an email? Explain in the simplest terms, to those who are not sure, exactly what an email is i.e. "A message that you write on your computer (or laptop or phone etc.) and send to someone else, so that they can read it on their computer (or laptop or phone etc.)" **Send a letter home to parents:** As children will be given an email address for this activity it is probably best to inform parents. Also request a parent email address so they can be added to the children's contacts.	What is an email? Why do we use email?
2	Talk about their use of ICT and develop rules for the use of emails. Understand there is a set way of communicating via email.	1. Open the resource presentation 'how to set up class emails' (Ref 6.2). Use (https://tocomail.com) to set up class emails with parent contact email addresses. You may also wish to add contacts for the likes of "Father Christmas", "Easter Bunny" or other fictitious characters from books the children are reading. This is so children can send questions and have conversations with these fictitious characters. 2. Open the resource presentation and run through this with whole class as a carpet time discussion. 3. Class discussion: What are contacts and who would you talk to? How should you behave when sending emails? Develop 5 classroom rules for sending emails.	What is an email? Who would you send an email to? What is a contact? Who would you have as a contact?
3	Compose a rough draft of email in set	1. Create first email in rough on paper using provided work sheet. (see provided email worksheet - ref 6.3)	What are the rules we need to remember before sending an email?

	format.	2. Create email display board with the children's rules on. Also include key terms with explanations and example of good work from the hand written rough draft emails.	Who would you send an email to?
4	Open a website/app and log in after instruction. Compose and send first email.	**Log on and let's get emailing!** Model on the IWB the task of sending an email with Toco Mail. The presentation let's get mailing will help (ref 6.4). 1. Give out to the children a slip of paper with their email address and password on. 2. Ask them to open this website https://tocomail.com in the browser or open the Toco Mail app on the iPad. 3. Then enter their details. 4. Once logged in the children can compose their first emails with drawings added. 5. Send these to the relevant contact. This can be accessed via the web or as an iPad app.	What is an email? How did you do that? What happens when we press 'send'? What is an address?
5	Use a simple paint program to produce a digital drawing.	**You've got mail!** 1. You or parent will have to reply to the child's email. In the reply email you must include a question to answer, the children will have to explore the web to find the answer. 2. Get Children to open their emails, via the app or website. 3. The children must find the answer to the question posed and then and reply with suitable email. 4. These can be printed for assessment purposes.	Who is the email from? What does it ask you to do? What would you do if it was from a stranger?
6	Retrieve and open digital files. Use print function to print work.	**Take a picture and send!** Get the children to take pictures of the classroom or their work and send these via Toco Mail.	What have you learnt about emails? Why do we use emails?

Further challenges and possible home learning activities:

Postcard pen pals - children create a multimedia postcard featuring themselves and the things that are important to them, compare with real life photographs of themselves and the things around them. Discuss the differences and similarities. You could use a simple publishing tool or even a video clip or talking photo using picture teller (http://tools.e2bn.org/pictureteller/)

Alternative Apps/Software to those recommended

Not applicable

YEAR 1

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Curriculum Links – YEAR 1:

Activity	Eng	Maths	Sci	PE	Art & Design	D&T	Geog	His	Music	PSHE	RE	MFL
Walking with Dinosaurs	X				X							
Pictures Tell a Thousand Words	X				X					X		
App Attack - Games Design	X	X			X							
Crazy Creatures	X	X										
Young Investigators	X				X							
We are all Connected	X				X		X	X		X		
Our Local Area	X				X	X	X					
Ready, Steady, Go	X	X			X							

KS 1 – Yr 1 (Ref: 7)

Apptivity Name: Walking with Dinosaurs

Summary:

By breaking down an everyday task, you can demonstrate to children the importance of sequencing. Children will also become familiar with the term algorithm.

By the end of this project, children will fully understand the term algorithm and will be able to use a simple app on an iPad to reinforce this learning

Key Computing Terminology:

Algorithm: An algorithm is a sequence of instructions and/or set of rules.

Conditional Language: can also be described as a *Conditional Expression,* they are features of coding that perform different computations or actions depending on a specified condition being either *True* or *False.* For example using the ***if then else*** construct, **If** t*he following Condition* is *True* **Then** do t*he following instructions* **Else** *do these different instructions*.

Sequencing: A set of actions or events that must be carried out in the same order every time.

Sprite: a sprite is a 2D image that is integrated into a computer game in a layered effect.

Computing POS Reference:

- **CS1 -** Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions
- **CS2 -** Create and debug simple programs

What is required?

Week 2:
- Pen and paper

Week 3:
- iPads - Toca Boca Hair Salon app

Week 4:
- Access to the school hall or playground

Week 5:
- iPads – Daisy the Dinosaur app

eSafety
Not applicable

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	What is an algorithm? Familiarise children with the meaning of algorithms and the need for them to be precise and accurate.	Start the lesson by explaining to the children that an algorithm is simply a sequence of instructions. Humans and computers follow algorithms to complete simple tasks i.e. an algorithm is a list of instructions defining how to complete a task and includes orders and decisions. Ask children to talk through simple routines that they do before school, for example - having breakfast. What is the process of making their breakfast? Start by putting bread in the toaster, wait a few minutes for it to heat up and start turning golden brown, check to see if the toast is brown enough, if so, pop the toast, decide whether you would like butter or jam, cut in half or quarters on a chopping board, put on a plate and eat. Give other examples of algorithms such as in cookbooks, which include step-by-step recipes.	Children able to understand and explain algorithms and the importance of order and accuracy. Children able to identify algorithms in everyday life. Why do we do things in an order? Why is it important that tasks are completed in an order? What happens if we buttered the bread first?
2	Instructional writing.	Ask children to draw or write down instructions for simple tasks such as making a sandwich. This needs to be step-by-step including any decisions that are made in the process. Ask children to highlight decisions and show the options that are available for each decision.	Children are able to break down tasks into a sequence of steps and understand the order of sequence. What do we mean by a sequence? What is a decision?
3	Create a word algorithm.	Demonstrate the use of an iPad to play a simple game such as Toca Boca Hair Salon. Show the children how to take a screen shot of each step in the process of getting ready. This may consist of wetting the hair, using shampoo to wash the hair, washing the shampoo off, towel drying the hair and then blow drying the hair etc. These screen shots could then be printed or even put into another program (such as pic collage) which the children could annotate with further instructions. The same activity could be repeated with Toca Boca kitchen.	Children are able to use a simple app on an iPad to create a word algorithm. Why did you do it in that order? What would happen if you changed the order so you dried the hair and then washed it?
4	Play 'Daisy the Dino' style	Reiterate to the class that an algorithm is simply a sequence of instructions. Humans	Children are able to follow and deliver word

		and computers follow algorithms to complete simple tasks i.e. an algorithm is a list of instructions defining how to complete a task and includes orders and decisions. Either inside the school hall or outside in a large open space, instruct the children to perform various commands such as taking one step forward, backwards, turning left or right. Add in commands such as jump, spin and roll. See if children are able to grow by putting their arms in the air or shrink by crouching down small. Pair children up and see if they can give each other simple word algorithms to follow. Explain that these word algorithms can be shortened by using commands such as repeat. Introduce them to conditional language such as when & if.	algorithms. What would happen if we change the instructions? Is there a better way of doing that, could you use an instruction such as 'repeat'? Why do we follow instructions?
5	Play 'Daisy the Dino' on the iPad.	Demonstrate how to use Daisy the Dino on the iPads. Explain to the children that it uses the same principles as explained in the earlier activity. Start the class on the 'free-play' mode and then ask them to switch to 'challenge' mode once they feel confident.	Children understand the term algorithm and are able to use a simple app on the iPad, unaided, to reinforce this learning. Why did Daisy Move? What did the 'repeat' instruction do? What happens if we change 'move' to spin?

Further challenges and possible home learning activities:

Ask the children to think of the games they play at home and produce a word algorithm for playing them.

Alternative Apps/Software to those recommended

Week 3:
- Alternative to Toca Boca Hair Salon app – replace with any digital game that has a step-by-step approach, for example I Can Cook Game - http://www.bbc.co.uk/cbeebies/i-can-cook/games/i-can-cook-game/.

Week 5:
- Alternative to Daisy the Dinosaur app – Scratch Junior (available from September) or http://learn.code.org/hoc/1

KS 1 – Yr 1 (Ref: 8)

Apptivity Name: Pictures Tell a Thousand Words

Summary:

This project will teach children about the main functions and buttons of a digital camera as well as about different shots so children can confidently capture their own shots using both a digital camera and the camera app on an iPad.

Finally, the children will develop an understanding of using pictures to tell a story.

Key Computing Terminology:

Not applicable

Computing POS Reference:

- **DL2 -** Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies

What is required?

Week 1:
- Digital Cameras

Week 2:
- Examples of different styles of photographs (not provided)

Week 3:
- Digital Cameras

Week 4:
- iPads – camera app

Week 5:
- Chosen story e.g. The Snowman (not provided)

eSafety

- Digital Citizenship & Technology 1.1 - Discuss the use of photographs with children, many of their parents and elder brothers/ sisters will post pictures online discuss with children who can see those pictures.

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Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	To teach children the main functions and buttons of a digital camera.	Demonstrate the use of a digital camera – show children the main buttons such as power button, the capture button, how to zoom in/out etc. Show children how to wrap the strap around their wrist when using the camera to avoid any damages. Explain to children that the camera needs to be still, steady and level before they push the capture button. Also that their finger must not cover the lens or the flash.	Children understand the function of the main buttons on a digital camera. What did we use a camera? What else would you use a camera for? What happens if we change…..?
2	To teach children about the different shots that a camera can capture.	In order to achieve a good photograph, the object that they are trying to capture needs to be inside the frame. Explain to children that they must try not to chop off any part of the subject/object they are trying to capture i.e. the whole subject/object must be inside the viewer on the digital camera. Show examples of different styles of photographs such as close ups, medium, long and wide angle shots. Explain the meaning of each style.	Children will have an understanding of different camera shots. What is the subject of the photograph? What type of photograph are you taking?
3	Children to experiment with cameras. Display and discuss the photographs taken.	Provide each child with a camera so they can experiment with taking different style of photographs. Display photographs on the board and discuss the various pictures. Point out any faults such as blurred pictures and ask the children what they think they could do to make it better.	Children able to take a photograph unaided and analyse the difference between good and bad pictures. Why do we take pictures? What is wrong with this picture? How could we improve on this picture? What is the object in this picture?
4	To teach children how to use the camera app on the iPad, view and edit any unwanted	Demonstrate to children how to take a photograph using an iPad. Explain that there is a camera on the front and back of an iPad and that they need to ensure they don't accidently cover either lens –	Children able to use an iPad unaided to take a photograph and use editing options. What do we mean by editing a photograph?

	pictures.	just like when they had to keep their finger away from the lens of a digital camera. Explain to the children that any photographs they take will be saved into the 'camera roll' on the iPad so the photo can be used in other apps. Show children how to view their photographs and how to delete any unwanted photographs. Using the Photobooth app apply a filter to the pictures to show you can change the appearance of a picture.		What are you doing to that photograph? Why are you changing that picture?
5	To familiarise children with stories that are told through pictures (no words) and recognise the effect that different shots have.	Explain to children that pictures can tell a thousand words as they capture events that can be put in order to tell a story. Use a picture story such as 'The Snowman' by Raymond Briggs as an example of a story that can be told simply through pictures rather than the use of words. Analyse the pictures in the story and see if the children can recognise the different shots, for example a wide angle shot takes a picture of the scenery or setting and is also known as the 'establishing shot' – close ups are used to show character emotions etc.		Children can recognise the different style of shots in a story and can explain their purpose or effect. What is happening in this picture? Who is in this picture? Where is this picture? How can you tell what is happening in this picture?

Further challenges and possible home learning activities:

Ask the children to look at some of their own photographs and ask them to critique their own photographs. Are they able to use those photographs to tell a story? For example, if they put ten pictures from their birthday party together does it tell the story of the party?

Alternative Apps/Software to those recommended

Week 4:
If you don't have iPads you could use a digital camera and then import the pictures to a laptop/PC.

KS 1 - Y1 (Ref: 9)

Apptivity Name: App Attack

Summary:

The aim of this apptivity is to introduce children to the simple concepts of games design as well as notions of sequencing, computational thinking, directional language and problem solving. The children will write and become comfortable with writing simple algorithms and understand the need for algorithms to be precise and accurate. The children will then storyboard an idea for a simple game, using "if" and "when" statements to explain what will happen in their game. This will be turned into mini video promos for their game.

Key Computing Terminology:

Algorithm: An algorithm is a sequence of instructions and/or set of rules.

Computing POS Reference:
- **DL1** - Recognise common uses of information technology beyond the school
- **IT 1** - Use technology purposefully to create, organise, store, manipulate and retrieve digital content

What is required?

Weeks 1-6:
- Robot Game Introduction - Ref 9.1
- Directional flash cards - Ref 9.2

Week 2:
- Robot Mask - Ref 9.3
- Simple Maze Diagram - Ref 9.4
- Chalk or toilet paper to create a maze.

Week 3:
- Teacher choice - colour pencils/felt tips and A3 paper or on an iPad/PC use a simple drawing application.
- Robot worksheet – Ref 9.5

Weeks 4-5:
- Suggested apps/software:
    - PC - Photostory 3 (Free),
    - iPads - Explain Everything (£1.99)
    - iPads - SonicPic (69p)
- Teacher tutorials depending on which app/software chosen:
  https://www.youtube.com/watch?v=fA9qZf7BwGs
  https://www.youtube.com/watch?v=b00ZeszvjP4
  https://www.youtube.com/watch?v=zLIpQlPwEoA

eSafety
Not applicable

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Introduce the children to algorithms.	Introduce to the children the idea of games design. Ask the children what games they like? Tell them that over the next few sessions they will design their own Robot game. Open "Robot Game Introduction" (Ref 9.1) Explain to the children that all games are made with Algorithms… *An algorithm is a sequence of instructions that humans and computers follow to complete tasks.* Emphasise that algorithms need to be accurate as computers aren't very intelligent i.e. they just do exactly what they are told! Ask pupils to shout out examples of words used for directions. Write these on a piece of flip chart paper and discuss/clarify the meanings of any words they are unsure of e.g. right, left, forward, backward, go and stop. (These words will form the basis of the next lesson.) Ask for a volunteer to pretend to be a robot in a game. Explain we will be creating (orally) algorithms using directional language as we give the robot instructions to move. Now, ask the children to move the 'robot' to somewhere within the classroom by giving directional language. *Note – If their understanding of directional language is not great then time needs to be spent reinforcing this before moving on to the next session. Directional flash cards (Ref 9.2) are also available if required.*	That an algorithm is a set of accurate instructions. Understand the use of directional language to produce oral algorithm. What is an algorithm? What is meant by directional language?
2	Children to reinforce their understanding of algorithms by giving instructions using directional	*Note - You will need to have access to a large space. For example, this lesson could be done outside with chalk or in the hall with toilet roll.* Preparation – Open the Robot Mask (Ref 9.3) and print out enough copies for half the class. Ask the children to work in pairs and cut out and attach string so the mask can be tied on. Remember do not cut out	Give and follow instructions, including turning movements, one at a time. What algorithm are you using?

		the eyes.	How have you made your Robot follow the maze?
	language.	This is a practical lesson whereby children work in pairs, one child plays the role of a robot and the other has to give a series of instructions (an algorithm), using directional language to guide their robot (who cannot see through their robot mask) around a maze.	Which part of the maze was the most difficult for your robot to follow?
		Move to the hall/outside and set the maze up (use Ref 9.4 for ideas). A cheap way to construct the maze is out of a couple of rolls of toilet paper or use chalk to map out a maze on the floor. The toilet roll/chalk lines represent the walls. The children have to guide their partners to stay within the walls (see Simple Maze Diagram provided Ref 9.4) (Make all turns 90 degrees). The children can then swap roles.	Why? How could you improve your instructions?
		Note - Construct the maze with the children (as opposed to setting up before the lesson) as this offers the opportunity to reinforce the language of direction.	
		Video or take photos to record the children's work.	
3	Children will create their robot and think about what the different elements of a game are.	Explain to the children that in this session they are going to draw a robot character in a scene that they will use as part of their game idea in a later session. Introduce and demonstrate a few games on the board as part of a class discussion or use worksheet ref 9.5. Ask the following questions: • What do you think makes a good game? • What sort of things should we include in our game? • What would be a good title for your game? • What does your robot look like? • How do the robots behave? • What do they do? You are looking for answers like: Platforms, places (where is it set: jungle, outer space, under water), obstacles, rewards, enemies? Make a list on a flip chart/board of key elements for the children to think about including when designing their own game. Ask them to draw their robot character in a maximum of three different scenes i.e. 3 different pictures. One picture could show the robot finding treasure, the next picture could show the robot fighting a baddy. This can either be done using colour pencils/felt tips and A3 paper or on an iPad/PC using a simple drawing application.	Understand that digital games are made up of different elements If drawing app used: Use simple drawing tool to express ideas. What makes a good game?
4	Children will create a short	Tell the children they are now going to create a video promotion of their game.	Able to discuss the elements of a game,

	video promo.	Ask the children to take pictures of their drawings from the previous session and import them into one of the apps suggested below. Then ask the children to add some audio (simply record themselves within the app talking about their game) so that they create a photo story. This can be done with numerous apps and software but here are 3 options: • PC - Photostory 3 (Free) - adding photos and audio tutorial: https://www.youtube.com/watch?v=fA9qZf7BwGs • iPad - Explain Everything (£1.99) - adding photos and audio tutorial: https://www.youtube.com/watch?v=b00ZeszvjP4 • iPad - SonicPic (69p) - adding photos and audio tutorial: • https://www.youtube.com/watch?v=zLIpQlPwEoA Encourage the children to include things like the following in their audio: • What order do things happen? • What is the aim of the game? • How does the robot move around? Try to get them to use terms like "if" and "when" which are conditional statements used in programming e.g. "when" the robot falls he hurts himself or "if" the robot gets hit by a baddy then he dies! Save their videos.	the order of events (sequence). Begin to use conditional language like "if" and "when." How did you find making your videos? Why would we use "if" and "when" in our videos?
5		Continue work from session 4. Once completed, save their videos. You can share these with parents by uploading them to the school website.	As above
6	Children will present their own videos.	Invite the children to stand up in front of the class and play their video. Encourage the class to ask questions about the game.	Able to present and communicate complex ideas. What did you most enjoy? What would you do differently next time?

Further challenges and possible home learning activities:

Ask children to explain their favourite game / app. They could make movies or ask them to answer the questions detailed in lesson 4 about their favourite game.

Alternative Apps/Software to those recommended
Not applicable

KS 1 - Y1 (Ref: 10)

Apptivity Name: Crazy Creatures

Summary:

Throughout this project, children will further develop their understanding of control, directional language and programming.

The project will reinforce children's understanding that instructions need to be given in a correct order and children will be able to give instructions using directional language and numerical units.

The final lesson will provide children with the opportunity to use a computer or tablet device to program a character through a series of challenges. Children will use their prior knowledge by using the same principles of sequential instructions.

Key Computing Terminology:

Control: In ICT Terms, this means the commands placed in a sequence to perform a desired task.

Directional language: Forwards, backwards, left and right.

Sequencing: A set of actions or events that must be carried out in the same order every time.

Simple Program: A sequence of instructions to perform a task

Computing POS Reference:

- **CS1 -** Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions
- **CS2 -** Create and debug simple programs
- **CS3 -** Use logical reasoning to predict the behaviour of simple programs

What is required?

Weeks 1 - 2:
- Flash cards – Ref 10.1

Week 3:
- Bee-Bots (or other floor robot)

Week 4:
- PCs – Bee-Bot software

Week 5:
- iPads - Bee-Bots and Bee-Bot Pyramid apps*
- *Alternative apps to reinforce this idea could be Peppa Pig – Air balloon game for left and right or Car game for forwards, backwards, left and right.

eSafety
Not applicable

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	What is directional language? Familiarise children with the terms 'forwards, backwards, left and right'.	Explain to the class that we are going to learn about directions and will explore the words we use to describe them. Play a game with the children to establish their understanding of the directions forwards, backwards, left and right. Show flash cards or point in different directions and get the children to shout out the correct terminology. Explain how forwards and backwards is different to up and down. In pairs and using prompt cards (ref 10.1), match the direction the child is standing in, with the arrow and images on the prompt cards. Can children match the words to the images?	Children able to recognise and use directional language. What is the difference between forwards and up? What is the difference between backwards and down?
2	Reinforce prior learning of directional language, encourage the use of the terminology and introduce the idea of sequencing. Program a floor robot.	Explain that the process of giving directions is similar to providing instructions and that instructions need to be given in a certain order (sequencing). In pairs, ask the children to direct each other using only the terms forwards, backwards, left and right. Flash cards (ref 10.1) can be placed on walls (with the word and symbol). *It must be emphasised when giving instructions that children must turn left or right and then move forwards again i.e. rotate their whole body first.* Introduce children to the Bee-Bots (floor robot). Explain how the Bee-Bot will not move unless we give it certain instructions or commands. We have to tell the Bee-Bot which way to go on the mats. Children will learn to complete a programme of single instructions. Children will also learn the importance of 'clearing' previous programs before starting a new one. Extension - Children could make their own pictures to be placed together to create a map. Then direct each other to different areas on their own maps.	Children able to recognise, use and understand directional language and begin to sequence instructions. Can provide a sequence of instructions for a floor robot. Can move a floor robot forwards/backwards/specify units. How are you making the Bee-Bot move? If you were to change the instructions you have given the Bee-Bot, what would happen?
3	To ensure that	Recap on prior knowledge of directional	Children able to recognise that

	children recognise that a set of 'step by step' instructions creates a program.

To program a Bee-Bot unaided. | language. Play a quick game to reinforce the use of directional language, encourage terminology and highlight the need for sequential ordering. Ask the children to predict what will happen next to ensure they have understood the previous lessons.

In pairs, ask the children to program the Bee-Bots mirroring the sequence you have created using the prompt cards.

Extend learning of sequencing by giving multiple instructional demands as opposed to single, using the Bee-Bots. | a string of instructions or commands placed together can create a simple program. Without this programme then the robot would not move.

Can program a floor robot without the help of an adult

Why does the Bee-Bot move in that direction?

What would happen if you didn't clear its memory?

What does the Bee-Bot do?

What direction is.....? | |
| 4 | To apply the same principles of sequential instruction using the Bee-Bot Software on a PC. | Children should now have a sound knowledge and understanding of using the floor robots.

Demonstrate how to use the Bee-Bot software.

Using the Bee-Bot software, children will transfer prior knowledge from the hands on experience, using the same principles of sequential instruction. | Children should have a basic knowledge of how to move the robot using the software.

Can you think of any other computer characters you can control?

What are you programming the Bee-Bot to do? | |
| 5 | Apply the same principles of sequential instruction using an iPad application. | Demonstrate how to use the iPad apps Bee-Bots and also Bee-Bot Pyramid.

Ask the children to play both apps. | Children should have a basic knowledge of how to move the Bee-Bot using the application.

What happens if you change the order of your instructions? How do you make the Bee-Bot go forwards? | |

Further challenges and possible home learning activities:

See extension activity detailed in Lesson 2

Alternative Apps/Software to those recommended

Week 3:
- Any floor robot can be used

Week 4:
- Alternative to Bee-Bot software - MS Logo (free download)

Week 5:
- Alternative to Bee-Bots and Bee-Bot Pyramid apps - Peppa Pig, Air balloon game or Car game.
- Mole in the Maze (free online game) – http://www.iboard.co.uk/iwb/Mole-Maze-663

KS 1 - Y1 (Ref: 11)

Apptivity Name: Young Investigators

Summary:

In this apptivity, children will learn how to search on the internet in relation to a specific topic to develop basic web skills. They will then be given the task of researching an historical famous person and producing a script which they will then read out whilst being recorded. These individual clips can then be out together to make a class video and presented to the children.

Key Computing Terminology:

Not applicable

Computing POS Reference:

- **DL2** – Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies
- **IT 1** - Use technology purposefully to create, organise, store, manipulate and retrieve digital content

What is required?

Week 1:
- Access to laptops with internet access
- http://horrible-histories.co.uk

Week 2:
- Access to laptops with internet access
- http://www.bbc.co.uk/cbbc/shows/horrible-histories
- http://www.bbc.co.uk/cbbc/watch/by/show/horrible-histories

Weeks 3 - 6:
- iPads with Thinglink app
- Teacher reference http://www.youtube.com/watch?v=jA8TIVSSSWY

Week 4:
- http://www.bbc.co.uk/cbbc/shows/horrible-histories

eSafety
n/a

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Children will learn basic web navigation skills.	Start by demonstrating how to open a web browser and tell the children that all websites have their own address just like where you live has an address. Skills to cover: • How to use a mouse to navigate around a web page. • Show the children how the mouse changes from an arrow to a pointed hand indicates a link to something else. • Clicking on links and getting back to where you started. • How do you find what you want on a website. • Look at the navigation bar also look at a few different sites. • Look at Google and show children how to search for different websites. Discuss with the children, different websites that they use and how they find what they are looking for. Recap - ask the children to tell you how you look for a website or how they can find what they are looking for? Lead children through a tour of the Horrible histories website: http://horrible-histories.co.uk Ask the children to work in pairs and visit the Horrible histories website. Ask them to: 1. Find and play one of the games. 2. Find out who "The villain of the week is"?	Demonstrate basic web skills. How do you search for a site? How do you launch the internet? What does the mouse icon change to when you hover over a link? How do you find what you are looking for on a website?
2	Content and the internet.	Demonstrate the different kinds of content you can find in a website i.e. words, pictures, films, animations, games and quizzes. Ask the children to explore this website and look at the different content: http://www.bbc.co.uk/cbbc/shows/horrible-histories Children can demonstrate that they can identify different kinds of content through teacher Q and A. Ask the children to watch a Horrible Histories clip. Choose from a selection here: http://www.bbc.co.uk/cbbc/watch/by/show/horrible-histories	Children can identify different kinds of content. Children can demonstrate what they have learnt. What type of content can you find in websites?

		Ask the children to talk about the key characters and where they found their information out from. How would they search for more information about these characters?	
3	Research a historical character. Start a Thinglink image.	Using the internet skills acquired so far, ask the children to choose a famous historical character (or you can allocate a character based on your current class topic) to research. For example, Queen Victoria, Christopher Columbus, Neil Armstrong, Tim Berners-Lee, LS Lowry, Rosa Parks or Florence Nightingale. Ask the children to work in pairs and using an internet search engine, find out some facts about the person e.g. date of birth, what country they were born in and what did they do? Ask them to write down as many facts as they can find The site below will be useful for this information: http://www.bbc.co.uk/schools/primaryhistory/famouspeople/	Children can search for information on the internet. Children help each other find information on internet. What internet search engine did you use? What information have you found?
4	Children to prepare a script to record.	Ask the children to write a short script using some of their research from the previous session. They must write the script in their own words. They will be recorded saying their script in the next session. Ask the children to introduce the character, explain who they are/ why they are famous and then any other interesting facts they have found. Next, ask the children to find the 'Things to do' section on this page and create some headwear that they can wear in the filming next session. http://www.bbc.co.uk/cbbc/shows/horrible-histories Give the children the opportunity to print there headware and then cut it out so that they can use it in the next session	Children can write a script. Children can create appropriate costumes. How did you find that site? How did you create your headware? How did you print your headware?
5	Children practice and record their script to camera.	If they didn't have chance to finish either their script or headware give the children the opportunity to finish both of these off. Once they have finished ask the children to put their headware on and record their scripts. You could ask the children to do the recorder or do it yourself. Use either a flip-cam, video recorder or an iPad record each of the children reading their facts. NB – You could use a green screen for this and if you are we'd recommend using the 'Green Screen' app on an iPad as this allows you to record and edit within the app.	What did you learn about being recorded? What do we mean by record?

6	Round up and evaluation.	Show the class there videos, asking them to introduce themselves. Ask the children to write down all of the facts about the famous people they have learned.	Show tell – and discussion What have you learnt? How can you improve next time?

Further challenges and possible home learning activities:

Using the app photospeak ask the children to download a picture of their famous character and then record their script as if they were the person.

Alternative Apps/Software to those recommended
Not applicable

KS 1 - Y1 (Ref: 12)

Apptivity Name: We are all Connected

Summary:

The aim of this apptivity is to help young children come to terms with how the web works and that we are all connected and contactable via access to the Internet. It will build on previous sessions and knowledge allowing the children to develop a better understanding of the Internet, by using a selection of different websites. The children will produce a simple eBook or presentation incorporating the key terminology from the sessions.

Key Computing Terminology:

eBook: an electronic version of a printed book which can be read on a computer or a specifically designed handheld device.

Sequencing: A set of actions or events that must be carried out in the same order every time.

Computing POS Reference:

- **DL1 -** Recognise common uses of information technology beyond school
- **IT 1** - Use technology purposefully to create, organise, store, manipulate and retrieve digital content

What is required?

Weeks 1-2:
- Watch My Neighbourhood video - Ref 12.1
- http://www.teachingideas.co.uk/welcome/internet/page1.htm
- Laptops/tablets with internet access if you choose to complete the tasks.

Week 3:
- Laptops/Tablets with internet access
- Modelling the WWW - Ref 12.2
- http://www.bbc.co.uk/cbeebies/shows/

Week 4:
- Laptops/Tablets with internet access
- Safe search engines based on Google http://primaryschoolict.com http://www.swiggle.org.uk/ http://www.kidsmart.org.uk/safesearching/

Week 5:
- iPads with Google Earth app OR PCs with Google Earth application preloaded.
- Teacher Reference site: http://sitescontent.google.com/google-earth-for-educators/
- http://www.bbc.co.uk/cbeebies/shows/
- http://www.kidsmart.org.uk/teachers/ks1/readsmartie.aspx
- http://www.kidsmart.org.uk/teachers/ks1/digiduck.aspx
- http://www.netsmartzkids.org/NetSmartzKids/controls/RBS-Play/pdfs/educators_guide.pdf
- http://www.netsmartzkids.org/RoutersBirthdaySurprise/RBSPlay
- http://www.netsmartzkids.org/LearnWithClicky/KnowTheRules
- http://www.netsmartzkids.org/LearnWithClicky/WayToGo
- http://www.netsmartzkids.org/eBooks/DeliveryForWebster

Week 6:
- Connected eBook presentation - Ref 12.3
- iPads/PCs
- iPad apps: Story Buddy and Book Creator OR PowerPoint OR Keynote
- Teacher Reference links: (https://www.youtube.com/watch?v=epmfaCiXxqo) (https://www.youtube.com/watch?v=znrlTHDzr6s)

eSafety:

- Digital Citizenship and Technology 1.1 & 1.3

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Children are able to navigate the web with confidence and understand basic language like "hyper link".	Explain to the class what the internet is by watching 'Watch My Neighbourhood' video (Ref 12.1). Ask the children how they use the internet. Next, as part of a carpet time discussion, work through the website below asking the children the questions as they appear. The site will demonstrate some basic web skills. http://www.teachingideas.co.uk/welcome/start.htm Ask the children to complete the tasks and challenge (where appropriate) from this website. *These tasks may take longer than the assigned period depending on children's ability. The site does involve quite a bit of reading but does offer audio support to help.*	What is a hyper link? What colour are links normally? What is a browser? What does it mean to be safe on-line? What is a web address?
2		Use this session to complete the tasks and challenge from the previous session if appropriate. **Additional idea:** Take the class on a short technology safari around the school or local area identifying street technology: network boxes, traffic lights, street lighting controls, alarms, phone lines etc emphasising that everything is connected. Alternatively, use this spare session complete more of the ideas outlined in sessions 3 and 4.	
3	How search engines work Children understand that search engines help us find things. Children can identify that databases are the means of arranging things to make them easier to find.	Search engines bring order and help us find things on the web. Choose one of the options below (unless you have time to complete them all): **Option 1:** Open the presentation 'Modelling the WWW' (Ref 12.2) and show the children how to play the 'Search Engine Game' which demonstrates how they work. **Option 2: One way of searching is using ABC...** Use the CBeebies website (http://www.bbc.co.uk/cbeebies/shows/) to show the children how information (games) can be stored in a database and displayed in alphabetical order. Explain how databases store information and should make things easier to find.	How does a search engine work? What is a database?

	73	**Option 3:** Websites will often order databases of resources using the alphabet, as shown in the example above. You could ask the children to order objects in the classroom in alphabetical order in order to create a role play area called 'Alphabetical toy shop'. Alternatively ask the children to line up/group themselves in alphabetical order, or by hair colour, height order, age order etc .	

4	Searching for what is around us.
	
	Children are able to search online and develop a better understanding of the Internet, by using a selection of different websites.
		Demonstrate to the children how to search and explain what keywords are (the words we type in to find images, people or places).
		
		There are safe search engines to use with young children if you have issues with using Google such as:
		• *Swiggle - http://www.swiggle.org.uk/*
		  Education search engine and resource site for children from UK South West Grid for Learning
		• *Safe Search - http://primaryschoolict.com/*
		  This is a filtered search engine based on Google
		• *KidSmart*
		  http://www.kidsmart.org.uk/safesearching/
		  A website full of advice and resources about safe surfing
		
		Ask the children to search online for local places and local people.
		
		Create with the children a list of places and famous people they know from the local area. Then ask the children to find pictures of the places/people identified.
			What is a search engine?
			
			What can you find using search engines?
			
			What makes a good search? (very descriptive keywords)
			
			How do you find images?

5	Going places safely: Using Google Earth to travel around the World. Children can use Google Earth to virtually travel to faraway places and explore.	Explain to the children we can go to exciting places online. Ask the children to talk about their holidays and where they have been, places they would like to go or places they have heard of that are far away. Create a list of destinations and ask the children to virtually visit each one using Google Earth. *Use Google Earth either on desktop PC or iPad to search for faraway places. Google Earth is a separate app/application that will have to be installed and is very easy to use. Tips and tutorials:* *http://sitescontent.google.com/google-earth-for-educators/* **Re-enforce to the children that they must follow certain rules to remain safe online.** **Additional stay safe on-line activities:** Childnet resources : http://www.bbc.co.uk/cbeebies/shows/ Smartie the Penguin: http://www.kidsmart.org.uk/teachers/ks1/readsm	What is Google Earth? How to you find places in Google Earth?

		artie.aspx Digiduck e-book: http://www.kidsmart.org.uk/teachers/ks1/digiduck.aspx Netsmartz: http://www.netsmartzkids.org/NetSmartzKids/controls/RBS-Play/pdfs/educators_guide.pdf Router's Birthday Surprise: http://www.netsmartzkids.org/RoutersBirthdaySurprise/RBSPlay Clicky's Online Safety Rap: http://www.netsmartzkids.org/LearnWithClicky/KnowTheRules Way 2 Go: http://www.netsmartzkids.org/LearnWithClicky/WayToGo Netsmartz video - being safe on the way to school: http://www.netsmartzkids.org/eBooks/DeliveryForWebster	
6	Making our eBook. Children can use simple app/application to sequence events and explain how the web works.	Open the presentation "Connected eBook" (ref 12.3) which explains the next task to the children. The presentation includes the statements they will need to create their eBook or presentation. Ask the children to produce an eBook/presentation sequencing the statements outlined in the presentation and inserting their own images. The children will use the following apps/software depending on which technology you choose. You will need to model the use of the chosen app or software first: **iPad apps:** Story Buddy (https://www.youtube.com/watch?v=epmfaCiXxqo) Book Creator (https://www.youtube.com/watch?v=znrlTHDzr6s) **PC:** PowerPoint **Mac:** Keynote	Why do you think the statement go in that order?

Further challenges and possible home learning activities:

Ask the class to act out the process of what happens when you search and perhaps make a class video from it.

Alternative Apps/Software to those recommended
Not applicable

Year 1 (Ref: 101)

Apptivity Name: Our Local Area (Out and About Exploring with Technology)

Summary:

In this computing activity we will be using technology to help us explore our local area. It uses investigative tasks to introduce children to the idea of looking at their local area with the aid of technology. The local area will be studied frequently during a child's time in primary school and therefore this unit focuses on aspects of local features to support learning about directional language and 3D skills to build amazing structures. This computing activity has strong connections with geography units.

Key Computing Terminology:

Directional language Forwards, backwards, left and right.

eBook An electronic version of a printed book which can be read on a computer or a specifically designed handheld device.

Computing POS Reference:

- **DL2 -** Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies
- **IT 1** - Use technology purposefully to create, organise, store, manipulate and retrieve digital content

What is required?

Week 1:
- Access to the following sites:
  - Google Maps

- School website
- Google Images
- Google Earth can also be used to explore the wider area.
- Useful Link – Use Street View in Google Maps
- **Additional Videos available in our DropBox:**
  - Google Maps Tutorial Video
  - Smart online Search Tips for Kids
  - Simple Google Search Tips

Week 2:
- Useful Link – How to take good photographs
- iPads with Pic Collage

Week 3:
- iPads with Toca Boca Builder
- Pic Collage (if you wish children to present and organise photos.)
- Need access to the following if using additional resources:
  - Shape Lab game
  - Captain Calamity game
  - Online Lego Building: Build with Chrome

Week 4:
- Google Maps
- Flip Chart Paper
- Maps and Toys presentation (Ref 101.1)
- **Other useful resources:**
  - Exploring different types of homes additional resources.

Week 5:
- Programmable toy such as Beebots/Dot & Dash/Spheros & Ollie (Tickle app)
- Beebot Blue-Bot app
- Kodable app
- Maps and Toys presentation (Ref 101.1)
- Worksheet (Ref 101.2).
- If following alternative lesson:
  - iPad with Beebot Blue-Bot app

- [What is Blue-Bot?](#)
- [What is the Blue-Bot app?](#)

Week 6:
- iPads with Story Board or Book Creator
- **Useful links:**
  - [https://www.youtube.com/watch?v=epmf aCiXxqo](https://www.youtube.com/watch?v=epmfaCiXxqo)
  - [https://www.youtube.com/watch?v=znrlT HDzr6s](https://www.youtube.com/watch?v=znrlTHDzr6s)

eSafety
- Digital Citizenship and Technology 1.1

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Visit websites relating to the local area and use online maps to explore.	**Using and navigating websites** This lesson will use the internet to explore the local area and community. We will start with a visit to your own school website. 1. Visit school website. Discuss the following questions: What is happening in school? Why are schools an important part of the local community? What else makes up our local area and community? 2. Google image search the local area. What are the key buildings/spaces that appear? 3. Use Google maps to find key buildings and spaces. Use the "Street View" feature to go on a virtual field trip of the local area. If you are using the desktop version of Google Maps you may wish to have the children plan a route for a school trip. 4. Ask three or four children to stand up and explain what they have found out about their local area. **Additional Videos available in our DropBox:** Google Maps Tutorial Video Smart online Search Tips for Kids Simple Google Search Tips	LO 1. Navigate the school website. LO 2. Use online map and advanced functions. Plenary: Why is a school website important? What else could you look for using Google Maps? Ask three or four children to stand up and explain what they have found out about their local area.
2	Learn to assess and make good choices about the quality of their own work. Learn how to take good photographs and present them.	**Digital photography and outdoor learning:** Review website (How to take good photographs) which provides advice on taking good photographs and discuss. Take the children on a trip to a local point of interest e.g. Town centre. Identify different types of buildings and some other key symbols that relate to the previous session of exploring and planning in Google Maps. *Tip: Ask the children to take lots of photos when out and about but review each one and decide if/how it can be improved.* As an alternative to taking the children on a trip the class could explore the outdoor areas of school. Hold an "interesting things" competition - Photograph mini beasts, leaves, trees etc. Then review the photographs back in class and discuss	LO 1. Take good photographs. LO 2. Present and organise information (photographs). Plenary: What makes a good photograph? What is a "Point of Interest"?

2		what makes a good photograph. The children can organise them using Pic Collage. These can then be saved/shared to their computing folder or online pupil portfolio.	
3	Children will create and play with models and explore patterns using a 3D model maker app.	**3D Shapes and Modelling:** Print out some of the best photographs taken in the previous session and discuss shapes, structures and colour. What are the differences between old and new buildings? What are the key features of buildings? Next, discuss 2D and 3D shapes and show examples. Then, using Toca Boca Builder on iPads, set children the task of building and using 3D tools to recreate buildings or shapes. Examples of what they could attempt to build: - School building or one aspect of it. - Fire Station or perhaps a fire engine. - Town hall or council building. - Local church or community centre. - Ancient structure or monument. Ask children to screenshot/save their images as evidence. These can then be saved/shared to their computing folder or online pupil portfolio and then later used for reflection. **Other resources:** Other online resources that support learning about 2D/3D shapes: Shape Lab game Captain Calamity game Online Lego Building: Build with Chrome (for more able children)	LO 1. What are 2D and 3D shapes? Plenary: Can you recognise the names and properties of 2D and 3D shapes?
4	Controlling robots part 1: Children will make their own map of the local area.	**Making Maps:** View the Maps and Toys (Ref 101.1) presentation. 1. Review aerial photographs from Google Maps with the children. 2. Using flip chart paper (or A3 x4 sheets joined together), ask the children to create their own map of the local area. 3. Ask the children to label key points with drawing of that place. This will be used in conjunction with programmable toys or a directional language/coding app in the next session. **Other resources:** Exploring different types of homes additional resources - this site may support other areas of this topic.	LO 1. Creating maps and plans at a variety of scales. Plenary: Why are digital maps important?

| 5 | Controlling robots part 2

Use programmable toys to explore your maps. | **Programmable toys and directional language:**

View the Maps and Toys (Ref 101.1) presentation.

Demonstrate using the programmable toy. Most schools have access to Beebots, these are ideal. However, there are a lot of new programmable toys available that will excite and engage your learners such as:

What is Sphero?
https://www.youtube.com/watch?v=Sl5_1jKd6ZQ
https://www.youtube.com/watch?v=0yQYr7CIxBc

What is Dot & Dash?
https://www.youtube.com/watch?v=F6XD9L5GDY0
https://www.youtube.com/watch?v=rheZ5ePOEEc

Set the children the task of using the programmable toy to explore their maps and fill in worksheet (Ref 101.2).

Key aims are that children can describe and talk about:
1. Position
2. Direction and movement
3. Writing algorithms and using them to program a Bee-Bot or other programable toy.

Alternative Lesson:
Beebot Blue-Bot
Within this app children can photograph their map and use it as the backdrop when programming the Beebot Blue-Bot in the app. This will help to explore directional language, control and coding.

Useful Links:
What is Blue-Bot?
What is the Blue-Bot app? | LO 1. writing algorithms and using them to program a Bee-Bot or other programable toy |
| 6 | Digital storytelling. | **Reflection and storytelling:**
Using Story Buddy or Book Creator ask the children to write a learning journey based on this activity and trip out. Include lots of photos and recordings and ask the children to reflect on their learning successes.

These videos may be useful if you need to demonstrate the use of these apps:

iPad apps:
Story Buddy
https://www.youtube.com/watch?v=epmfaCiXxqo
Book Creator
https://www.youtube.com/watch?v=znrlTHDzr6s | LO 1. Can you simple app/application to sequence events. |

Further challenges and possible home learning activities:

Ask the children to design their own school or classroom. Ask them to use one of the 3D applications or Lego to bring it life and explain the features of their design.

Alternative Apps/Software to those recommended

Week 2: PowerPoint or any similar software/app that allows the children to organize their photographs.

Week 3: Blox 3D or alternatively use Lego.

Week 5: As an alternative if you don't have access to any programmable toys, photograph the children's map and use with Beebot Blue-Bot app to explore directional language, control and coding.

Week 6: PowerPoint or any similar software/app that allows the children to write their learning journey.

Knowsley
City Learning Centres

Year 1 (Ref: 102)

Apptivity Name: Ready, Steady, Go

Summary:

In this computing activity, children will learn about algorithms to produce their own simple game using Scratch Junior.

Key Computing Terminology:

Algorithm An algorithm is a sequence of instructions and/or set of rules.

Computing POS Reference:

- **CS1 -** Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions
- **CS2 -** Create and debug simple programs
- **IT 1** - Use technology purposefully to create, organise, store, manipulate and retrieve digital content

What is required?

Week 1:
- Access to:
  http://www.bbc.co.uk/guides/zqnc4wx
  http://play.bbc.co.uk/play/pen/gktkmzxktl

Week 2:
- Scratch Junior
- Ready, Steady, Go Presentation (Ref 102.1)
- Teacher Guide (Ref 102.2)

Week 3:
- Scratch Junior
- Ready, Steady, Go Presentation (Ref 102.1)

Week 4:
- Scratch Junior
- Ready, Steady, Go Presentation (Ref 102.1)
- Teacher Guide (Ref 102.3)

Week 5:
- Scratch Junior
- Ready, Steady, Go Presentation (Ref 102.1)

Week 6:
- Scratch Junior
- Ready, Steady, Go Presentation (Ref 102.1)
- iPads with Pic Collage

eSafety
Not applicable

Knowsley
City Learning Centres

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1.	Understand instructional language is used to form algorithms.	Explain to the children that computers and robots function by following instructions. These are called algorithms. Ask the children to give you some examples of instructions that they may have been given that day. For example 'brush your teeth,' 'stand in line' or put 'your hand up.' Introduce the BBC bitesize site on how to program a robot and emphasise that instructions must be accurate. Show the children the module called 'how does a robot work' in the link below: http://www.bbc.co.uk/guides/zqnc4wx Ask the children to complete the Robot Routes game: http://play.bbc.co.uk/play/pen/gktkmzxktl	Children are able to understand and explain what an algorithm is. Children understand the need for accurate instructions. What is an algorithm? What is an accurate instruction? Can you give me an example of an accurate instruction?
2.	Children develop their understanding of accurate instructions.	Recap with the children the previous lesson and discuss the need for accurate instructions. Unplugged activity: Ask the children to do the Hokey Cokey and now ask them to write an algorithm for doing the Hokey Cokey. Introduce the children to the App Scratch Junior. Deliver the 'driving' lesson detailed in Ready, Steady, Go Presentation (Ref 102.1). There is also a teacher guidance document to help create the completed driving simulation see Teacher Guide (Ref 102.2)	Children can explain what an accurate instruction is. Children can create a simple animation is Scratch Jr. Do those instructions have to go in that order?... What would happen if I changed those instructions? What does that instruction do?
3.	Children begin coding.	Continue with the Driving lesson.	As above

		Ask the children to take 1 screen shot of their car driving (with the completed code at the bottom of the screen). Ask the children the different ways they could complete this task. For example we could use 17 x move forwards instructions. Why do they think it's better to use just 3 instructions when you are achieving the same outcome?	
4.	Children develop their coding skills.	Complete Lesson 4 in the Ready, Steady, Go Presentation (Ref 102.1). In this activity explain to the children that the 'Green Flag' is the trigger, without that instruction nothing will happen but on its own it doesn't do anything. Explain to the children that all computer programs need a 'trigger' to start them. There is also a teacher guidance document to help create the completed race see Teacher Guide (Ref 102.3)	Children can code three characters to run a race. What would happen if you changed this coding block for that one? Why do the characters stop at the end of the screen? Which coding block sets the speed of the characters?
5.	Children develop their coding skills.	Complete Lesson 5 in the Ready, Steady, Go Presentation (Ref 102.1). Ask the children to take one screen shot of the completed race.	As above.
6.	Children reflect on their learning	Use the app Pic Collage to collate evidence of the childrens work. Guidance on how to do this is detailed in the Ready, Steady, Go Presentation (Ref 102.1). (Lesson 6).	Children can reflect on their learning and consider what they have done and what they may do differently next time.

Further challenges and possible home learning activities:
N/A

Alternative Apps/Software to those recommended

Week 6: Book Creator or MS Word

Knowsley
City Learning Centres

YEAR 2

Curriculum Links – YEAR 2:

Activity	Eng	Maths	Sci	PE	Art & Design	D&T	Geog	His	Music	PSHE	RE	MFL
You've got mail	X									X		
Super Sci-Fi	X		X		X			X				
Whatever the Weather		X										
Code-tastic		X										
Young Authors	X				X			X		X		
Let's Fix IT					X							
Vehicles	X		X		X	X						
Mythical Creatures	X				X			X				

KS 1 – Y2 (Ref: 13)

Apptivity Name: You've Got Mail

Summary:

The aim of this apptivity is to help children explore how they can use email to communicate with real people within their schools, families, and community.

Key Computing Terminology:

Message: something you want to tell or ask another person

eMail: messages distributed by electronic means from one computer user to one or more recipients via a network.

Internet: an electronic system that connects billions of people using computers, phones, or other devices, and allows them to communicate with one another

Computing POS Reference:

- DL1 - Recognise common uses of information technology beyond the school
- IT 1 - Use technology purposefully to create, organise, store, manipulate and retrieve digital content

What is required?

Week 2:
- **Send a letter home to Parents – inform the parents that the children will be given an email address for this activity and also request a parent email address so the child can email them as part of this exercise.**
- Internet access
- Websites:
  http://www.google.com/green/storyofsend/desktop/#/it-starts-with-send
- Camera

- How to set up class emails – Ref 13.1
- Let's get mailing - Ref 13.2
- Laptops/Tablets with access to:
  https://tocomail.com or Toco Mail app

Week 3:
- Internet access
- Websites:
  - http://www.cybersmart.gov.au/Schools/Teacher%20resources/Lower%20primary/~/media/Cybersmart/Schools/Documents/Hector_Lesson_Plans_Set_1_Your_personal_information_online/Lesson_plan_Lower_primary_Hector_Episode_1_Details_Details.pdf
  - http://www.cybersmart.gov.au/Schools/Teacher%20resources/Lower%20primary/Lower%20primary%20teacher%20resources.aspx
  - http://www.roareducate.com/wp-content/uploads/pdf/mo_cooking.pdf
  - http://www.roareducate.com/wp-content/uploads/pdf/mo_jungleclub.pdf
  - http://www.bbc.co.uk/cbbc/clips/p01g2pt6
- Link to animation "Hector's World"
  http://www.hectorsworld.com/island/main/episode_theatre_interior_01/

Week 4 - 6:
- Edmodo Video Tutorial – Ref 13.3
- Internet access
- Laptops/Tablets
- https://www.edmodo.com

Week 6:
- Adding an Assignment - Ref 13.4

eSafety
- Digital Citizenship & Technology 1.1, 1.2 & 1.5

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Children gain an understanding of email.	**Class discussion:** **Essential Question** How do you connect with others through email? **ASK:** Have you heard of email? Do you have an email account? Do other members of your family have an email account? Have you ever sent or received an email? How do you think email works? **DEFINE** the Key Vocabulary term **email** and encourage the children to discuss the idea that email is a way to send and receive messages. You may wish to reinforce children's understanding of the terms "send" and "receive" by writing a short message on a piece of paper and having them pass it around the classroom. They can practice saying the words "send" and "receive" as they pass the message on.	Understand that emails are messages that are "sent" and "received" through the Internet. What is an email? What does "sent" and "received" mean?
2	Children will learn about how emails are sent.	**Send a letter home to Parents – inform the parents that the children will be given an email address for this activity and also request a parent email address so the child can email them as part of this exercise.** **Class Discussion:** Review the following HTML 5 animation from Google that shows what happens when you click SEND on an email message using Gmail. http://www.google.com/green/storyofsend/desktop/#/it-starts-with-send The video will probably introduce a lot of new terminology as you explore the journey of an email. Ask the children questions to check that they understand. **Activity idea: What's Brilliant about me!** With a camera or using an iPad camera, ask the children to take a selfie (this is an up close photograph of themselves). Then ask the children to write 5 things that are brilliant about themselves e.g. I'm brilliant at football, I'm brilliant at art etc. Next, open the resource 'How to set up class emails' (Ref	Send simple email and obey rules of good communication. How are emails sent? How do you log on to Toco Mail?

		13.1) which will show you how to use https://tocomail.com. This is a free email service for children. *You will need to set up a master account and then you can add individual email addresses for each child within this account. Also add parent contact email addresses and/or add contacts for the other classes or schools you are in contact with.* Demonstrate to the children how to send an email with Toco Mail. The presentation 'Let's get mailing' (Ref 13.2) will help. Give the children a slip of paper each with their email address and password on. Ask them to go to https://tocomail.com in the browser or open the Toco Mail app on the iPad and enter their details. Once logged in the children can compose their first email and attach their selfie along with their 5 brilliant things. Ask them to send their email to the relevant contact.	
3	What can I share? Children will learn about the importance of keeping personal information private.	Very young children may be quick to volunteer information about themselves both on and offline and to people who appear to be an authority figure. This lesson aims to teach children that some information is 'precious' or 'special' because it applies just to them. This personal information is as valuable online as it is offline and should therefore not be shared without a parent or teacher's permission. Follow this lesson plan for class activity on personal information and sharing information. http://www.cybersmart.gov.au/Schools/Teacher%20resources/Lower%20primary/~/media/Cybersmart/Schools/Documents/Hector_Lesson_Plans_Set_1_Your_personal_information_online/Lesson_plan_Lower_primary_Hector_Episode_1_Details_Details.pdf Show the class the animation "Hector's World" http://www.hectorsworld.com/island/main/episode_theatre_interior_01/ **Extension**: If you wish to spend more time on safety then these following websites provide many useful resources: • Sharing Personal Information - http://www.cybersmart.gov.au/Schools/Teacher%20resources/Lower%20primary/Lower%20primary%20teacher%20resources.aspx • Roar Educate poster – Strong Passwords - http://www.roareducate.com/wp-content/uploads/pdf/mo_cooking.pdf • Roar Educate Poster – Online Identity -	Children understand that some information about themselves is special because it makes them unique. Children know that they should never give out their personal details online without a parent or teacher's permission. What is personal information? What is acceptable information to share? Why shouldn't you share too much?

		http://www.roareducate.com/wp-content/uploads/pdf/mo_jungleclub.pdf • Guy Fawkes shares personal information over the internet and gets into trouble - http://www.bbc.co.uk/cbbc/clips/p01g2pt6	
4	Set up and Using Edmodo. Children will learn how to log onto Edmodo and post on the class wall.	You as the teachers will need to set up the Edmodo (https://www.edmodo.com) account which is a free, online learning space designed especially for schools. This can be accessed on iPads or desktops via the web. Whilst it may look like Facebook, it is much more child-friendly. Children can only access and send messages to their whole year group - they can't send private messages to each other and no strangers can 'friend' them. Messages may also contain attachments - uploaded files, pictures or website links. This enables them to learn the benefits of digital communication in a safe environment. Watch the video tutorial (Ref 13.3) on how to set up and add/invite your class. Don't worry it's quite easy. Ask the children to log on to Edmodo using the class code and then ask them to set up a user name and password. This might be easier if it was completed in small groups. Ask the children to make their first post on the class wall. Make sure the children make a note of their user name and password as they will need this for later sessions.	Able to log onto Edmodo. Able to post on Edmodo. When posting, what etiquette rules should you follow? Did you have any problems?
5	Let's get posting 1. Children will learn how to add a profile picture and participate in a class poll.	Teacher - log on to Edmodo and create a poll - something that will get the children talking. Maybe relate it to something that is going on in school. Ask the children to log in to Edmodo using their user name and password. Ask them to: • Add a profile picture. • Answer the poll question and leave a comment. • They can also reply to other children's post if they wish. Encourage children to work out how to do the above tasks themselves and also help others.	Add picture to Edmodo Add comments and answer questions in Edmodo What do you think of Edmodo?
6	Let's get posting 1. Children will complete an assignment.	Open the tutorial "Adding an Assignment" (Ref 13.4). Ask the children to log on to Edmodo and to upload a photo of a book they are reading with a simple review. Again, let the children comment on other posts.	Add picture to Edmodo. Add comments and answer questions in Edmodo. How else could we use Edmodo?

Further challenges and possible home learning activities:

Ask the children to create class rules for using Edmodo – what should they post, who would they talk to etc.

Alternative Apps/Software to those recommended

Not applicable

KS 1 – Y2 (Ref: 14)

Apptivity Name: Super Sci-fi

Summary:

This space inspired project starts by children creating a simple space invader game. The children will then create their own digital graphics that they will export to use in a second game that they will create using advanced settings. The children will also learn about mnemonics and create their own interactive quiz as well as bring Neil Armstrong to life retelling his story!

Key Computing Terminology:

Mnemonic: a system such as a pattern of letters, ideas, or associations which assists in remembering something.

Podcast: Podcasts are shows, similar to radio or TV shows that are produced and posted to the Internet for download and listening or viewing.

Computing POS Reference:

- **DL2 -** Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies
- **IT1 -** Use technology purposefully to create, organise, store, manipulate and retrieve digital content

What is required?

Week 1:
- Teacher Guide to Sketch Nation Shooter - Ref 14.1
- iPads - Sketch Nation Shooter app

Week 2:
- iPads - Create a Martian app
- Brushes app
- Internet access
- Websites: http://printablecolouringpages.co.uk/?s=+anime+rocket+ship or http://www.clipartbest.com/pictures-of-space-rockets-for-kids

Week 3:
- iPads - Sketch Nation Studio app

Week 4:
- Internet access
- iPads – Tinytap
- Teacher Reference Guide: *http://www.youtube.com/watch?v=4DsIu8LkATo*

Week 5:
- Internet access
- Website: http://www.bbc.co.uk/learningzone/clips/apollo-11-one-small-step-for-man/7365.html
- iPads - Photospeak

Week 6:
- Macs – GarageBand

eSafety
Not applicable

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	To create a simple space invader game.	Open the resource "Teacher Guide to Sketch Nation Shooter" (Ref 14.1) Sketch Nation Shooter (produces space invader style games) is a simple app that makes game development easy and accessible built on user-created content, meaning every game is unique and individual to the learner. Ask the children to open Sketch Nation Shooter in simple mode and using the in-app art galleries, create their own game by adding a player and an enemy. Once the children have created and played their game, discuss game play – what additional aspects are included? Talk about points scored, percentage hits and the power-up options of varied shooting styles, as well as having a player and enemy. **Extension activity:** Open the resource "Teacher Guide to Sketch Nation Shooter" (Ref 14.1) Page 3. Extend this lesson by asking children to create their own 'player' and 'enemy' on paper and then import them in to the app as part of a new game. Play and discuss.	Children are able to create their own 'space invader' style game. Children understand the elements that make up a computer game. What did you think of Sketch Nation Shooter? Was it easy or hard to use? **Extension:** Children create their own graphics for their game.
2	Create and export digital graphics to use in game play.	Show the children how to use Create a Martian. Ask the children to create 2 or 3 alien characters. Ask the children to experiment with styles to create scary and friendly aliens. Discuss what features help to change the appearance. Ask the children to take a screen shot of each alien created. Explain that a screen shot will save to the photo gallery and will then be available to use in other apps on the iPad. If you do not have access to this app, then the children could find suitable images here: (http://printablecolouringpages.co.uk/?s=+anime+rocket+ship or http://www.clipartbest.com/pictures-of-space-rockets-for-kids) Demonstrate Brushes to the class explaining how layers work. Ask the children to import their alien image into Brushes to trace over and colour in their images in order to create characters to use in a game in the next session. The children could also find further images on the internet and then import	Create alien characters to be used as enemies in game play. How did you make your alien look scary? How did you make your alien look friendly? What did you think of using Brushes? Children can use a drawing app to

		these images in to Brushes to trace and colour in and use in their game: (http://printablecolouringpages.co.uk/?s=+anime+rocket+ship or http://www.clipartbest.com/pictures-of-space-rockets-for-kids) Ask the children to share and add their photos to the photo library on the iPad. **Extension activity:** These characters and objects could be printed on card and used to create or reflect a space-themed story or as a display.	create characters and graphics for a game. Children are able to search on the internet. Children are able to share their drawings.
3	Apply advanced design concepts to create a complex game.	Ask the children to create a storyboard that tells the story of their game i.e. detail the plot, characters (including a player, 5 enemies and a 'boss' to be defeated at the end), its purpose, how points are accrued, how to revive a player and the use of power-ups etc. Open the resource "Teacher Guide to Sketch Nation Studio" (Ref 14.2) Once the children have created their storyboard, ask them to open the Sketch Nation Studio app and create their own game in Advanced mode. The children can import their images created in Brushes in the last session to use as part of their game. **Extension activity:** Create a leader board to record individual high scores and use this information to demonstrate data logging and ask the children to create charts/ graphs, find averages and trends etc.	Determine parameters for game play. Use advanced features to create levels and more complex settings. What did you think of Sketch Nation Studio? Was it easy or hard to use? **Extension:** Children are able to record and analyse data.
4	Create character profiles	Ask the children to create their own profiles for each of their characters. Use the app Pic Collage and ask the children to add the picture they have drawn in brushes, add the name of their characters and then some information about them. Ask them to be creative to create a story about their characters, they could include the following headers: • Where they come from. • Name of the spaceship they drive. • Favourite food. • What they like/ dislike. • What language they talk. • How they move.	Create a mnemonic to help recall the 9 planets of the Solar System. Children search on the internet using an advanced search to find a large image. Children create their own quiz game Did you like using the Tiny Tap app?

			Did your mnemonic help you remember the order of the planets in our solar system? What other mnemonics could we make?
5	Recall and recreate famous events.	Watch a video of the 1969 moon landing (example: http://www.bbc.co.uk/learningzone/clips/apollo-11-one-small-step-for-man/7365.html). Then discuss with the class the importance of this event, what it meant, the emotion of the astronauts, possible risks, timeframes etc. Ask the children to script a message from Neil Armstrong to either retell the famous speech or give a personal account of their experience of being the first person to step foot on the moon. PhotoSpeak allows children to bring history to life by animating a still image of a famous person or character. Firstly, ask the children to search on the internet and find a photo of Neil Armstrong, save into the photo gallery and then import it into PhotoSpeak. Ask the children to use the record button to add their audio to the image. The final result will be a talking, nodding and blinking Neil Armstrong clip that can be exported as a video file. *Tips for using PhotoSpeak:* • *Use a photo that is face on, without glasses and with the mouth closed. The app will open the mouth as part of the animation and add teeth when 'speaking'.* • *Record in a quiet space to produce higher quality audio as the app will pick up background noise.*	Script a 'moonlanding' message. Record a moon landing video message. What did you like about using PhotoSpeak? How could you improve your video?
6	Podcast	Introduce the concept of podcasts to the children and tell them they are going to write a script to later record as a podcast. The script could be about their thoughts and feelings about life on Mars or reporting on maintenance they are doing on a remote space station or even about experiencing being the first civilian shuttle into space. Set the scene using real accounts and footage then set the parameters for the task, discussing the elements that make up a podcast and the type of information that would be included in a diary entry: date, time, location, emotions, events, feelings, hopes and fears, family etc. Demonstrate GarageBand to the class. Now ask the children to open GarageBand to record their script.	Children create a script or a series of diary entries for their podcast. Children record their own podcast. Children are able to enhance their podcast with photos, music and sound

			effects.
		A podcast can be broken down into chapters using markers and photos can be added to reflect the content. Once the audio is completed, the children could add music and sound effects. When all elements are complete, ask the children to export their podcast so it can be later viewed as part of a class viewing.	Children are able to export their podcast. Can you explain what a podcast is? How could you make your podcast better?

Further challenges and possible home learning activities:

Ask the children to create a newspaper article reporting on the Moon landing – this could be done on Word, Publisher, Pages, Comic Life etc.

Alternative Apps/Software to those recommended

Week 2:
- Alternative to Brushes app – Paint (cannot trace in Paint though, would have to copy over the image)

Week 3:
- Alternative to Sketch Nation Studio app – none available

Week 4:
- Alternative to Tinytap – none available

Week 5:
- Alternative to Photospeak – Crazy talk (not free)

Week 6:
- Alternative to GarageBand – Audacity or Audio Boo for Education (requires sign up) https://audioboo.fm/about/education

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KS 1 – Y2 (Ref: 15)

Apptivity Name: Whatever the Weather

Summary:

This apptivity will get children looking at data and how it can be presented to allow it to be interpreted. Children will have to gather the data and then select the most appropriate method to display the data they have captured – in graphical format. This will teach them some of the fundamental skills of desktop publishing packages.

Key Computing Terminology:

Data: information which can be stored, retrieved and manipulated in digital form using digital devices.

Computing POS Reference:

- **IT1 -** Use technology purposefully to create, organise, store, manipulate and retrieve digital content

What is required?

Week 1:
- Worksheet - Ref 15.1

Week 2:
- Ice Cream worksheet - Ref 15.2
- Ice cream flash movie – Ref 15.3

Week 3:
- Access to PC/ Laptops with MS Excel & Word
- Worksheet - Ref 15.4

Week 4:
- Access to website http://www.topmarks.co.uk/maths-games/5-7-years/data-handling

Week 5 & 6:
- Access to PC/ Laptops with MS Excel & Word

eSafety
Not applicable

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Children understand what it meant by 'interpreting data.' Children can explain what is meant by 'data.'	Discuss with children the different ways that information can be presented; ask them the different ways that they know. Explain to children that sometimes when we have large amounts of statistical data we may need to present it in a way that people can easily understand it. Ask the children to work through the worksheet (Ref 15.1), this will demonstrate to children how information can be presented (in graphical format) and requires the children to interpret the information that they are seeing.	Why do we use graphs to display information? What is data?
2	Children can identify different ways of collating data.	Ask children about the different ways of collecting information, how do we find things out? Discuss surveys and statistical data with them. Ask children a 'favourite question' and demonstrate how to complete a tally chart, for example: What is your favourite Colour? Blue, Green, Yellow or Orange and complete the tally chart for the class. Give children 'Ice Cream resource worksheet' (Ref 15.2) and then play the ice cream game (Ref 15.3). Ask the children to complete a tally chart for each of the ice creams. Keep the completed worksheets for the next lesson.	What is a tally chart? Why do we use a tally chart? How can we use the information collected in a tally chart?
3	Children are able to present findings. Children are able to interpret data.	Using the completed ice cream tally charts and using MS excel, create a pie chart for each day. Once the children have completed this, ask the children to copy their chart into Microsoft word and ask them to answer the questions on the worksheet (Ref 15.4) in Word. In completing this the children will have a report showing the number of ice creams sold and will demonstrate the way in which information can be presented.	What does this graph show us? Why have you used a graph to display this information?
4	Children are able to interpret data from graphs.	Recap the way in which data can be captured and presented. Introduce the children to the site below:	What is this graph showing you? Why do you think....?

	Children can identify what information would be shown in a graphical format.	http://www.topmarks.co.uk/maths-games/5-7-years/data-handling Ask the children to complete the 'Alien Snail Race,' Fruit Fall & Data Analysis Explorer.	Why do you think that?
5	Children can input data accurately and present this information in graphical format.	Recap the ways in which information can be displayed. Tell the children they are now going to look at using graphs to display comparative data. One example of this can be to compare the weather for when we are considering where to go on holiday. Ask the children to find out the daily temperatures for Liverpool and London for the past 5 days. Ask them to input this data into Excel and produce a bar chart which compares the average daily temperatures. Ask the children to compare the data, which city had the most hot days/ rainy days etc.	From the data which day was the hottest in Liverpool? Which city had the fewest rainy days? How many rainy days did London have last week?
6	Children compare data.	Carrying on from the previous lesson ask the children to find out the daily temperatures for the past five days for a further 3 cities and ask them to add this to the data they have already input. Now ask the children to produce a line graph to show the temperatures for each of the 3 cities. Again ask the children to copy and paste this graph into a word document and ask the children to compare the data.	What is the difference between a bar chart and line chart? What would happen if you change the data in your spreadsheet? What is a spreadsheet?

Further challenges and possible home learning activities:

As the children to consider other ways they can use graphs, ask them to create their own survey for a topic of interest and produce a graph to show their results – for example which football team each of them support and then produce a pie chart to show the results.

Alternative Apps/Software to those recommended

Weeks: 3, 5 & 6
- MS Excel - use Numbers (Mac or iPad)
- MS Word - use Pages (Mac and iPad)

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KS 1 – Y2 (Ref: 16)

Apptivity Name: Code-tastic

Summary:

The best way for children to learn about computer programs and algorithms is to have a go themselves. This apptivity lets them use a variety of programming apps/software to give children a practical understanding of how computer programs actually run, how a computer follows a sequence of instructions and what to do when a program goes wrong.

Key Computing Terminology:

Algorithm: An algorithm is a sequence of instructions and/or set of rules.

Sequencing: A set of actions or events that must be carried out in the same order every time.

Debugging: This is the process of finding errors or problems with your code and trying to fix it. Sometimes code will be in the wrong order or there could be bits of code missing, the process of fixing the code is called debugging.

Computing POS Reference:

- **CS1 -** Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions
- **CS2 -** Create and debug simple programs
- **CS3 -** Use logical reasoning to predict the behaviour of simple programs

What is required?

Week 2:
- iPads – A.L.E.X app

Week 3:
- iPads – Daisy the Dino app

Week 4:
- iPads – Move the Turtle app

Week 5 & 6:
- iPads – Hopscotch app

eSafety
n/a

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Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Have an understanding of what code does.	Explain what code is and what it is used for. To illustrate code, play the following game. Explain the rules of "Simon Says." Using the basic rules of this game, groups of children must navigate from one corner of the room to the other corner using one member of the group to follow the instructions. Each group starts with 100 points. 1 point is deducted for: i. Not following an instruction ii. Bumping into an object iii. Not giving clear instructions. The group that completes the task with the most points wins. Highlight how providing clear instructions is the basic premise of code.	Play "Simon says" game to understand how delivering a set of instructions can successfully achieve a goal. Why do we need to follow instructions?
2	Introduce how you could change and improve upon a game.	Demonstrate how to program ALEX the robot. Discuss how this program is slightly different to 'Simon Says' as ALEX has to be pointed in the direction you want to go in before you move. Think about how we could improve this program to make it easier or how we could make it more difficult.	Understand that algorithms are precise instructions that are followed. What instructions are you giving ALEX? Why do you have to turn him before moving him?
3	Understand the commands used in Daisy the Dino and creating your own code.	Using Daisy the Dino, introduce how programming works to control Daisy's movements. Use challenge mode so a new command is introduced after each challenge. Discuss which commands are better to use and then look at other commands like roll and shrink. In free play mode, children must get Daisy to dance using all the commands. Show the best examples on screen.	Follow a simple algorithm. What happens if....? Why has Daisy done that?
4	Create code to draw shapes	Demonstrate 'Move the turtle' app.	Devise a simple algorithm.

	using "Move the turtle."	Challenge the children to make the turtle draw a square. Challenge the children to draw another shape. Show tell: children demonstrate how they completed the task.	Why do we put the instructions in order? What happens when we change the order?
5	Create code using Hopscotch.	Demonstrate "Hopscotch" commands. Show how changing variables of some commands can create many different shapes. Ask the children to make shapes using Hopscotch. They can use more than one character.	Children are familiar with variables and 'debugging' programs. What happens when you change….?
6	Create code using Hopscotch part 2.	Children go to navigate to community area of Hopscotch and browse other games that have been designed. Children can download their favourites and see how the game was designed. They can design their own game based on this new coding knowledge. Ask the children to reflect on what they have learned and then discuss with the class.	Children are familiar with variables and 'debugging' programs. What do we mean by 'debug'? Why have you chosen this game?

Further challenges and possible home learning activities:

Children to develop their own 'navigation' app idea. What will the main character be that the player has to control, what directions can they move in and what will they navigating around?

Alternative Apps/Software to those recommended

Week 2:
- Alternative to A.L.E.X app – Robot Maze Game (free online game) - http://www.mazegame.us/robot_maze_game.htm

Week 3:
- Alternative to Daisy the Dino app – Scratch Junior or http://learn.code.org/hoc/1

Week 4:
- Alternative to Move the Turtle app – http://www.iboard.co.uk/iwb/Mole-Maze-663

Week 5 & 6:
- Alternative to Hopscotch app – MS Logo

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KS 1 – Y2 (Ref: 17)

Apptivity Name: Young Author

Summary:

This apptivity will take the children on a technological journey that will show them how technology has advanced over the years. They will research particular pieces of technology that has shaped the current technological world we live in. Once they have captured this information they will produce a book to show what they have learned.

Key Computing Terminology:

Infographic: visual representation of information, that can be very complex, displayed in a way that can be interpreted quickly and easily.

eBook: an electronic version of a printed book which can be read on a computer or a specifically designed handheld device.

Computing POS Reference:

- **IT1 -** Use technology purposefully to create, organise, store, manipulate and retrieve digital content
- **DL2 -** Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies

What is required?

Week 1:
- Internet access
- Web 1.0 and 2.0 Presentation (Ref 17.1)
- Laptops or tablets for internet research
- Skitch, Popplet or other mind mapping/ annotation app.
- http://www.bbc.co.uk/learningzone/clips/development-of-the-internet/3760.html

Week 2:
- Internet access
- Laptops or tablets for internet research
- MS Word
- Websites:
  http://www.akita.co.uk/computing-history/
  http://visual.ly/history-media-storage
  http://articles.bplans.com/an-infographic-history-of-computer-programming/
  https://leveragenewagemedia.com/blog/wp-content/uploads/2013/12/Social-infographic_2014.png.
  http://www.computerhistory.org/timeline/
  http://piktochart.com

Week 3:
- MS PowerPoint/Keynote

Week 4,5&6:
- iPads – Book Creator App and iBooks

eSafety
- Digital Citizenship and Technology 1.1

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Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Discover the history of the World Wide Web.	Show the children the video below to show the development of the internet: http://www.bbc.co.uk/learningzone/clips/development-of-the-internet/3760.html Open up presentation 'Web 1.0 and 2.0' (Ref 17.1) and explain the differences to the children. Research the impact of the World Wide Web and draw conclusions using Skitch, Popplet or other mind mapping/ annotation apps.	Explore the origins of the World Wide Web. Illustrate the differences between Web 1.0 and Web 2.0. Share work. What is the difference between Web 1.0 and Web 2.0? What app did you use to create your mindmap?
2	Outline the key advancements in computer development.	Divide the children into groups and allocate a decade (from 1939) for research. Use http://www.akita.co.uk/computing-history/ as a starting point to give an example of an infographic, but also as a stimulus to discuss technological advancements. The sites below may also be useful: • http://visual.ly/history-media-storage - change in computing storage • http://articles.bplans.com/an-infographic-history-of-computer-programming/ - the codes used and the people behind it • https://leveragenewagemedia.com/blog/wp-content/uploads/2013/12/Social-infographic_2014.png. – The development of social media • http://www.computerhistory.org/timeline/ - Various info covering 1939 - 1994 Children to produce an infographic in MS Word to illustrate the key modifications from their decade in computing history. The children should identify changes in hardware, software, storage, hand-held devices (inc mobile/ smart phones), connectivity (dial-up, broadband, wifi, 3G, 4G) and programming. Ask the	Identify major developments through the decades (from 1939 to present day). Timeline key events. Share work. What is an infograph?

		children to use both text and graphics. Children to save their infograph as they will use this in their eBooks in session 4.	What did you use to make it?
3	Present findings to peers to share knowledge.	Ask each group to produce a presentation using PowerPoint or Keynote showing what information they have found out about their decade and the technological developments within it by identifying the key pieces of technology that were created in this decade and what they were used for. Have a running order and introduce each group to set the tone for a formal presentation.	Prepare to share findings with other groups. Present findings. What did you use to create your presentation? Where did you find the information? What makes a good presentation?
4	Create an eBook based on research findings.	Children to create their own eBook showing the development of technology. Don't forget to tell the children to include their infographic from session 2. Discuss the process for creating a book. Text is the most important aspect so should account for a large proportion of the allocated time in their book creation. Images, audio and video are not essential but do act to support the text in a visual way. All images should be relevant, focused and of good quality. Use this as an opportunity to discuss thumbnails and picture size. Demonstrate the Book Creator app to the children, which they will use to create their eBook.	Script the content for their eBook What Font did you use? Why? What style have you chosen for your front cover? Will that make it standout?
5	Create an eBook based on research findings	Children to continue producing their eBook.	
6	Enhance layout with images, audio and video	Book Creator also allows you to add audio and video content. Audio is great if using a glossary of terms as the word can be recorded and used to aid understanding for the reader. Ask the children to consider adding audio to their books – they could record themselves reading individual pages. Ask them to consider adding videos to help tell the story or link to webpages that are relevant to their book and that the reader can go to for more information. Ask the children to export their eBook to iBooks.	Consider additional content to improve the look and readability of the eBook. Share eBook How do you add audio? Why are we adding a recording?

Further challenges and possible home learning activities:

Children to produce a timeline to show the development of technology

Alternative Apps/Software to those recommended

Week 2:
- Alternative to MS Word – Pages on a Mac

Weeks 4-5
- Alternative to Book Creator App and iBooks – MS Word

KS 1 – Y2 (Ref: 18)

Apptivity Name: Let's Fix IT

We recommend delivering this project in one day or 2 x ½ days.

Summary:

This apptivity has been designed to challenge children to analyse simple computer programs and for them to identify the errors within the code and then find a solution.

Being able to 'debug' code is a key skill children need to develop if they are to be able to write their own code. It also demonstrates an understanding of code and computational thinking.

Key Computing Terminology:

Computer Program: A computer program is a sequence of instructions written to perform certain tasks by the computer. It's a way of talking to the computer to ask it to do things for you.

Code: These are the instructions used to write a computer program. Different pieces of code can be arranged in different ways to give the computer a set of instructions.

Debugging: This is the process of finding errors or problems with your code and trying to fix it. Sometimes code will be in the wrong order or there could be bits of code missing, the process of fixing the code is called debugging.

Conditional Language: can also be described as a *Conditional Expression,* they are features of coding that perform different computations or actions depending on a specified condition being either *True* or *False.* For example using the *if then else* construct, **If** t*he following Condition* is *True* **Then** do t*he following instructions* **Else** *do these different instructions*.

Sprite: a sprite is a 2D image that is integrated into a computer game in a layered effect.

Computing POS Reference:

- **CS2 -** Create and debug simple programs
- **CS3 -** Use logical reasoning to predict the behaviour of simple programs

What is required?

Weeks 1 - 5:
- Lets Fix It Lesson Guide - Ref 18.1
- Macs/Laptops with Scratch

Week 2:
- Video - Activity 2a.mp4
- Video - Activity 2b.mp4

Week 3:
- Video - Activity 3.mp4
- Problem 1 and Problem 2 – Ref 18 folder

Week 4:
- Video - Activity 4.mp4
- Problem 3 and Problem 4 – Ref 18 folder

Week 5:
- Video - Activity 5.mp4
- Problem 5 and Problem 6 – Ref 18 folder

Week 5:
- Video - Activity 5.mp4
- Problem 7 and Problem 8 – Ref 18 folder

eSafety
Not applicable

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Children understand what is meant by 'debugging.' Children can identify the key components of a computer program.	Open the resource "*Lets Fix It – Lesson Guide*" (Ref 18.1) Using the *Lets Fix It – Lesson Guide* in the resource folder give an explanation of what code is and how debugging is part of coding. To help explain what debugging is use the BBC Bitesize clip in the link below: **http://www.bbc.co.uk/guides/ztgjq6f** Introduce the children to the Scratch program and explain the main parts of the user interface. Demonstrate the code blocks in Scratch, how they snap together and how they work to make the sprites do things. Give the children time to explore the Scratch program and build different types of code blocks and programs. Guide the children through Activity 1 (within Ref 18.1).	Understand that computer programs are made up of blocks of code and that sometimes the blocks of code are wrong and need to be fixed, this process is called debugging. Have a basic understanding of scratch and how to build code blocks. Can build basic code blocks to create a small program. Understand the difference between the stage and a sprite. What is meant by 'debugging'?
2	Children can create their own sprite and stage.	Open the resource "*Lets Fix It – Lesson Guide*" (Ref 18.1) Guide the children through Activity 2 (within Ref 18.1).	Understand how to draw in Scratch. Can create their own background images on the stage. Can create their own sprites. What is a sprite? How did you create a background?
3	Children can program their sprite to move. Children can identify where code goes wrong.	Open the resource "*Lets Fix It – Lesson Guide*" (Ref 18.1) Guide the children through Activity 3 (within Ref 18.1). **Ask the children to solve Problem 1 and Problem 2 in the Lets Fix It section.**	Can order code blocks to make basic sprite movements. Understanding of how to build code blocks that will effect the motion of a sprite. Can debug simple motion code block problems so that they work in

			the correct way. How do you make your sprite move? How did you identify the problem?
4	Children can debug lines of code.	Open the resource "*Lets Fix It – Lesson Guide*" (Ref 18.1) Guide the children through Activity 4 (within Ref 18.1). Ask the children to solve **Problem 3** and **Problem 4** in the Lets Fix It section.	Can build code blocks to use sound and talking. Understanding of how to build code blocks that will incorporate sound and make a sprite talk. Can debug simple looks & sound code block problems so that they work in the correct way. What was wrong with the code?
5	Children are able to use 'sensors' and 'conditions' within their code.	Open the resource "*Lets Fix It – Lesson Guide*" (Ref 18.1) Guide the children through Activity 5 (within Ref 18.1). Ask the children to solve **Problem 5** and **Problem 6** in the Lets Fix It section.	Can build code blocks that use sensors to detect sprite movement. Understanding of how to build code blocks that use conditions and sensors. Can debug simple code blocks with condition and sensor problems so that they work in the correct way. What is a sensor? What are conditions?
6	Are able to identify and use 'loops'. Can identify loop problems within completed code.	Open the resource "*Lets Fix It – Lesson Guide*" (Ref 18.1) Guide the children through Activity 6 (within Ref 18.1). Ask the children to solve **Problem 7** and **Problem 8** in the Lets Fix It section.	Can understand the difference between repeating loops and forever loops. Understanding of how to build code blocks that will incorporate loops. Can debug code blocks that have problems with loops so that they work in the correct way. What is a repeating loop? What is a forever loop?

Further challenges and possible home learning activities:

Children to produce a glossary for the new terms they have learnt to help other children – Loop, sensor, debugging etc.

Alternative Apps/Software to those recommended

Not applicable

Year 2 (Ref: 201)

Apptivity Name: Vehicles (Making, Designing and Building)

Summary:
In this computing activity we will researching, designing and building our own vehicles. The children will then produce their own advert to showcase their amazing creations.

Key Computing Terminology:
eBook An electronic version of a printed book which can be read on a computer or a specifically designed handheld device.

QR Code A machine-readable code consisting of an array of black and white squares, typically used for storing URLs or other information for reading by the camera on a Smartphone.

Computing POS Reference:
- **IT1 -** Use technology purposefully to create, organise, store, manipulate and retrieve digital content
- **DL1** - Recognise common uses of information technology beyond school
- **DL2 -** Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies

What is required?
Week 1:
- Worksheet (Ref 201.1)
- Access to the following sites:
  - Google
  - http://www.kidsmart.org.uk/safesearching/http://www.kidsmart.org.uk/safesearching/.
- iPads with ChatterKid app
- Other Useful Resources:
  - Cyber Bee.
  - Copyright video
  - Safe Search Google
  - Ref 201.2 – Google Search Tips video
  - Ref 201.3 – Online Search Tips video

- Ref 201.4 – Google Maps

Week 2:
- Show Foldify lesson presentation (Ref 201.5)
- Ref 201.6 and 201.7 – additional instructive Foldiy video and handout.
- iPads with Foldify

Week 3:
- Junk model resources such as Cardboard, plastic straws etc.
- Access to https://www.youtube.com/watch?v=0m-sJBCTj0A
- https://drive.google.com/file/d/0BybxEpZ0Wn_wOVZmcENUTG1MQ2c/view?usp=sharing
- Information sheet - https://www.facebook.com/Ri.ExpeRimental
- QR code poster (Ref 201.8)
- Camera

Week 4:
- Space for a Car Race
- Extra activity- iPads with Easy Chart
- Camera/Video

Week 5:
- iPads with Shadow Puppets Edu or Telligami
- Additional Resources:
  - Using Shadow Puppets EDU (Ref 201.9)
  - Using Telligami in class (Ref 201.10)

Week 6:
- iPads with Book Creator
- **Useful links:**
  - https://www.youtube.com/watch?v=znrlTHDzr6s

eSafety
- Digital Citizenship and Technology 1.1

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Digital citizenship Looking at how Google (search engines) works, advanced searches and copyright. Learn about the different parts of a web browser and how to search for images sensibly and effectively using a search engine.	**Safe and effective searching** Explain we will use the web to search for images of vehicles but first we need to understand what it means to be a safe surfer. Open up a browser (IE, Chrome, Safari or Firefox) and discuss the different parts. 1. Explore and discuss the different elements of a web browser. See worksheet (Ref 201.1). 2. Review this website with the children and discuss what it means to be a safe surfer - http://www.kidsmart.org.uk/safesearching/http://www.kidsmart.org.uk/safesearching/. Ask questions relating to the SMART section. 3. Introduce the word "copyright" and asks who owns the photographs on the web? 4. Let's search for images. Ask the class to list the types of vehicles they know. Create a word bank. Use Google advanced search to find images of cool vehicles from the list below. They must use the "search by colour" option in the advanced image search. Search activity: A car (green), boat (blue), bike (red) ,motor bike (red) and an aeroplane (blue). The children must save the coolest one of each and write a sentence for each. E.g. Here is an aeroplane flying high in the sky. 5. Use ChatterKid app to make short videos. **Other resources:** • Introduce Google advanced search. • Cyber Bee - Use this flash resource to discuss digital citizenship. • This video will help you understand and discuss Copyright with your class (9-12 year olds) • Safe Search Google - In this step-by-step video, learn how to turn on the SafeSearch feature within Google. This search tool will help remove inappropriate and explicit content from your search results. • We have included 3 videos that may support your teaching in this lesson (Ref 201.2, 201.3, 202.4)	Children understand the different elements of a browser. Children Understand what safe search means. Children understand there are many types of vehicles, which have different purposes. What do I mean by 'Safe Search'? What is a browser? What does copyright mean?

2	3D Modelling Create a 3D model.	**Using Foldify App** Show Foldify lesson presentation (Ref 201.5). Ref 201.6 and 201.7 also provide additional help with an instructive Foldify video and handout. Foldify is a really clever (and addictive) combination of papercraft and 3D modelling. Cut, fold, glue and then you have yourself a 3D model. Ask the children to decorate their own car using the car template in Foldify, then print, cutout and glue.	Children can create a computer to create a 3D model.
3	Film making / photography / digital drawing Create a balloon powered car.	**Making cars** In this lesson we will use technology to foster independent learning, set them the challenge of who can make the fastest balloon powered car in this fun science activity. The children can watch the following instructive video that will help them build a model vehicle. Children will also be asked to record their efforts with photos and video. Watch the following video – 'Balloon car racers - ExpeRimental #6' https://www.youtube.com/watch?v=0m-sJBCTj0Ahttps://www.youtube.com/watch?v=0m-sJBCTj0A or https://drive.google.com/file/d/0BybxEpZ0Wn_wOVZmcENUTG1MQ2c/view?usp=sharinghttps://drive.google.com/file/d/0BybxEpZ0Wn_wOVZmcENUTG1MQ2c/view?usp=sharing For more ideas and to download an info sheet click here: https://www.facebook.com/Ri.ExpeRimental **Lesson:** 1. Give out junk model resources* to the children. Put children into groups of two or three and set a time limit. 2. Children must scan the QR code (Ref 201.8) or follow the link to watch the instructive video. The children can watch the video as an aid to building their own balloon car. 3. Ask the children to take photos as they build their model balloon car. * Junk model resources required for the activity are listed in the video. Cardboard, plastic straws etc. Can you improve on this design and add extras?	Children are able to follow an instructional video. How did the video help you? Where you able to follow the instructions from the video? Do you think videos are a good way of sharing instructions? How can you improve on this design?
4	Film making / photography / digital drawing	**Create a race track** Who made the fastest balloon powered car? It's time to measure and record!	Children race their cars and evidence their findings.

		1. Either outside or in the school hall create a start and finish line. 2. Get the children back into their groups. 3. Race the balloon cars. 4. Using rulers measure the total distance travelled. Whose went the furthest? 5. Using stop watches record the time it took to travel to the finish line. 6. As an additional activity, record these in a spreadsheet, a great app is Easy Chart. 7. Take lots of videos and photos.	Why do you think that car went the furthest? How could you improve your car?
5	Animation Use technology to reflect on the process of build models.	**How did you do?** Ask the children to use Shadow Puppets Edu or Tellagami and selected photos to create a video of their construction process. They will have to sequence the images, add their own narrative and discuss what is happening. For some children Tellagami maybe an easier app to use. **Other resources:** Using Shadow Puppets EDU (Ref 201.9) Using Telligami in class (Ref 201.10)	Children can critically analyse their designs and use video to document this. What story are the pictures/ video telling? What could you do differently next time?
6	Storytelling	**Reflection and storytelling:** Using Book Creator ask the children to write a learning journey based on what they have done and learnt including lots of photos and recordings. Ask the children to reflect on their learning successes. This video may be useful if you need to demonstrate the use of Book Creator: https://www.youtube.com/watch?v=znrlTHDzr6s	Children are able to reflect on their learning. What were you asked to d? How did you did this? What would you do differently next time?

Further challenges and possible home learning activities:

Ask the children to make their own creative videos that detail how to make or use something. This will help the children understand the detail that is included in the videos such as the car making one they have all used. It's not as simple as it looks!

Alternative Apps/Software to those recommended

Week 6: PowerPoint or any similar software/app that allows the children to write their learning journey.

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Year 2 (Ref: 202)

Apptivity Name: Mythical Creatures (The golden age of animation)

Summary:

The children will learn about the history of and different types of animation. They will firstly produce a story about their made up mythical creature and then create their animation out of Clay/Plasticine or Paper using Animate it.

Key Computing Terminology:

eBook An electronic version of a printed book which can be read on a computer or a specifically designed handheld device.

Stop motion is an animation technique that physically manipulates an object so that it appears to move on its own. The object is moved in small increments between individually photographed frames, creating the illusion of movement.

Computing POS Reference:

- **IT1 -** Use technology purposefully to create, organise, store, manipulate and retrieve digital content

What is required?

Week 1:
- Presentation Ref 202.1

Week 2:
- Pencils/paper
- Camera to document progress

Week 3:
- Pencils/paper
- Camera to document progress

Week 4:
- Chosen materials to produce animation/background
- Camera to document progress

Week 5:
- iPads with Animate it

Week 6:
- Finished Animation

eSafety
Not applicable

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Discuss examples of animation and techniques used.	Show presentation (Presentation ref 202.1) and discuss what animation and stop frame animation is. Discuss the process of stop frame and how to achieve a smooth animation by using small movements and lots of photos e.g. 12 pictures = 1 second of film.	Children can identify different types of animation. Children understand the process of stop frame animation. How have you produced that? What is Stop Frame Animation?
2	Develop their creatures.	Talk about mythical creatures used in films and stories such as the Gruffalo or Shrek. Tell the children that they will be creating their own mythical creature. In groups, ask the Children to discuss and feedback on some mythical creatures they like from film and animation. Ask the children to start planning what their creature will look like on paper. Ask them to think about why it is mythical and what makes it so special and write this down on their paper. This will serve as a basis of the story that they will develop. Children can take photos of their work to document what they have created so far.	Children develop their creature on paper. What creature have you created? What is special/ unique about your creature?
3	Plan the story.	In pairs, give the children a story mountain (or other appropriate story planner) and ask them to come up with a plan for their animation. Children can take photos of their work to document what they have created so far.	Children are able to plan a story they can animate. What happens at the … beginning, middle, end?
4	Make the creature and any backgrounds	Using available material such as clay, plasticine or paper, ask the children to make their creature. Using Clay or Plasticine: The Creature must to be made so that parts of the body	Children produce creatures and backgrounds for their animation.

		of the creature can be manipulated to simulate movement etc, if it's poorly made then the legs etc might fall off. Using paper: The creature must have some moving parts like a tail, arms, legs, tentacles. To do this, draw the limbs separately, cut out and re attach to the body using split pins so you move the limbs in the animation. Backgrounds: These are just used as backdrops and can be used to tell the story. Children can take photos to document what they have created so far. *NB All elements of the animations must be stored in a safe place until the next session.*	Have you considered the colours of the background and the characters for filming? What parts of your characters move? Why have you made parts of the characters move?
5	Produce the animation.	In this session, the children must set up their animation. Show children how to use Animate it. *The key to a successful animation is to ensure your camera and your backgrounds are not moved i.e. they stay in exactly the same place, this can be done with blue-tac for the backgrounds and for the ipad use some masking tap to tape the ipad cover to the table.* Once completed, the children can export and save their animation to the camera roll.	Children create their own short animations? How have
6	Children showcase their animation.	Each group can present their animation to the whole class. **Reflection and storytelling:** Using Book Creator or PowerPoint (or similar) ask the children to write a learning journey based on what they have done and learnt including photos and their recordings. Ask the children to reflect on their learning successes. This video may be useful if you need to demonstrate the use of Book Creator: https://www.youtube.com/watch?v=znrlTHDzr6s	Children present work to class.

Further challenges and possible home learning activities:
N/A

Alternative Apps/Software to those recommended

Week 5: Any stop motion animation app or you can use a stills camera and put photos together in iMovie or Movie Maker

YEAR 3

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Curriculum Links – YEAR 3:

Activity	Eng	Maths	Sci	PE	Art & Design	D&T	Geog	His	Music	PSHE	RE	MFL
Get Blogging	X							X		X		
We are Publishers	X				X							
Class Democracy	X				X			X		X		
We love Games												
Big Robots	X	X										
My First Program												
Going for Gold	X			X								
Young Coders	X											

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KS 2 – Y3 (Ref: 19)

Apptivity Name: Get Blogging

We recommend delivering this project in 2 x ½ day sessions.

Summary

In this project, children learn about how the internet works and how the internet is used for communication.

Children will develop an understanding of how wikis work and will then be given the opportunity to create their own wiki in small groups encouraging collaborative writing.

 Next, the children will review examples of blogs online, learn the basic elements of creating a blog and will then create their very own.

 Children will then evaluate and review each other's blogs in a final presentation.

Key Computing Terminology:

Blogging: A personal website/webpage which an individual records opinions, links to other sites, etc. on a regular basis.

Wiki: A website developed collaboratively by a community of users, allowing any user to add and edit content.

Computing POS Reference:

- IT3 - Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information
- DL3 - Understand the opportunities [networks] offer for communication and collaboration
- **DL4 -** Be discerning in evaluating digital content

- **DL5 -** Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

What is required?

Week 1:
- Internet Access - http://thekidshouldseethis.com/post/26674356049

Week 2:
- iPads – Popplet app
- Web 1.0 and 2.0 – Ref 19.1
- Communication tools list - Ref 19.2

Weeks 3 - 4:
- Internet access
- Wiki Account - https://www.wikispaces.com
- *Reference link: http://en.wikipedia.org/wiki/Collaborative_writing*

Week 5 & 6:
- Internet access with either access to Edmodo or Wordpress.
- *Reference link: http://thenextweb.com/apps/2013/08/16/best-blogging-services/*

eSafety
- Digital Citizenship & Technology 2.1, 2.2 & 2.4

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Children have a basic understanding of how the internet works and how they can access it.	Ask the children to work in groups and discuss how they think the internet works. Groups to feedback to the class. Present how the internet works on a very basic level, this YouTube clip gives a good introduction: http://thekidshouldseethis.com/post/26674356049 Discuss how everything is connected to everything else via code e.g. HTML and devices like tablets and smart phones are also computers.	Children discuss and feedback how they think the internet works. Through animated clips discuss how data /information is transported around the world creating the internet. What is data? How is data transferred on the internet?
2	Children create a mind map of how they can communicate on the internet.	Show the children the difference between web 1.0 and 2.0, summary below for a more detailed presentation see ref 19.1. **1.0** Read, download, consumer, keep to yourself, watch, static pages that don't change, locally installed applications that work on your PC. **2.0** Write, upload, publish, share, participate, dynamic pages that do change, web based application, work on the internet. Discuss what communication tools are available now and how you might use them. See Resource 19.2 for a list of examples for your reference. Children create a mind map on Popplet or other mind mapping software to illustrate their learning so far.	Discuss how the internet has changed how we interact with it. Discuss different websites used to communicate and create. What are the different ways we talk to each other on the internet? What does email mean? Children create a mindmap of sites discussed.
3	Children can create a basic wiki	Sign-up to https://www.wikispaces.com. You will then be able to create a wiki space for each group to contribute too. Show examples of how wikis are used and how they work. Using highlighted words or key words to link to other pages in Wikipedia etc. Explain that Wikis use HTML to link key words together. Introduce the pros and cons of mass collaborative tools to share information and knowledge. Also discuss the responsibilities that go with publishing	Understand how links work on websites and the code behind it. Identify issues around sharing information on the internet. Employ one or more of the collaborative writing

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		content on-line. Split into groups and decide upon a theme for their wiki, for example around a current topic they are studying in class or an interest of theirs. Children to start populating their wiki. *More information about collaborative writing can be found here -* http://en.wikipedia.org/wiki/Collaborative_writing	methods to write a wiki. Why do we use the internet to communicate? What are the advantages of online communication?
4	Children can create a basic wiki.	Sign back into their wiki space and complete their site.	What is a blog? What is a post?
5	Children are able to explain what blogging is	Introduce the idea of blogging (web –logging), look at some examples including twitter (micro blogging) and Facebook. Groups can now decide through research what blogging site they would like to test (must be a site that can be accessed in school). Edmodo could be used as a Facebook alternative or WordPress and Blogger offer more functionality. Examples of blogging sites http://thenextweb.com/apps/2013/08/16/best-blogging-services/ Ask the children to create their blogging site.	Children understand what a web-blog is. What do mean by blogging? Why would you write a blog?
6	Children publish their blogs and evaluate them.	Groups to finish the sites they were working on in session 5. Demonstrate all sites created and ask the children to explain what the main features are and if they would use their chosen site again and why. Class can evaluate and reflect on what they have learned from this process through discussion.	How did you create your blog? What would you do differently next time? What would you change about your blog?

Further challenges and possible home learning activities:

Children could research other blogs and wikis that are available and are relevant to the theme of their blog. What are the differences between the two?

Alternative Apps/Software to those recommended

Week 2:
- Alternative to Popplet – Microsoft Word or PowerPoint – or simply pen and paper

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We recommend delivering this project in 2 x ½ day sessions.

KS 2 – Y3 (Ref: 20)

Apptivity Name: We are Publishers

Summary:

Children will create an eBook retelling the story of a famous book including illustrations that they will create themselves using Brushes.

Key Computing Terminology:

eBook: An electronic version of a printed book which can be read on a computer or a specifically designed handheld device.

Computing POS Reference:

- **IT3** -Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information
- **DL5 -** Use technology safely, respectfully and responsibly; recognize acceptable/ unacceptable behaviour; identify a range of ways to report concerns about content and contact

What is required?

Week 1:
- Chosen book – we recommend a Roald Dahl book (not provided)

Week 2:
- Chosen book (not provided)
- http://www.quentinblake.com/index.php/gallery/illustrations

Week 3:
- iPads with Brushes
- Teacher reference: http://www.youtube.com/watch?v=GwkJF2rkzPo

Weeks 4-6:
- iPads with Book Creator
- Teacher reference: http://www.youtube.com/watch?v=_wy2fXLBdvo

eSafety
Not applicable

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Introduce the children to a popular illustrated book	We would recommend using a Roald Dahl book for this apptivity although you can substitute for another book you are currently studying in class but it would need to be one that includes illustrations. Read the children the chosen story and explain to them that they will be making their own version of the book.	
2	Children become aware of how illustrations are used in books.	Finish reading the book to the children Ask the children why they think authors use illustrations in their books? What do they add to the story? Make a note of all of their answers (you will use this in week 6). It may help to show some of the illustrations from the book on the whiteboard, these can be found in the website below: http://www.quentinblake.com/index.php/gallery/illustrations	Children can identify why illustrations are used in books What is an illustration? Why would you use an illustration?
3	Children are able to produce digital art	Demonstrate how to use the app 'Brushes' showing the children how to change colours/brush styles etc. If you are unsure how to use Brushes, watch this demonstration below: http://www.youtube.com/watch?v=GwkJF2rkzPo Ask the children to recreate some of the drawings from the Roald Dahl book you have read. These pictures should be saved to the camera roll so they can be used in their books in the next few sessions.	Children create their own illustrations Why did you choose to create that illustration? How did you draw that?
4	Children to recreate their own version of a popular illustrated book.	Demonstrate how to use Book Creator. If you are unsure how to use Book Creator, watch this demonstration below: http://www.youtube.com/watch?v=_wy2fXLBdvo Demonstrate how to create a new book. Including how to change font styles/size/colour, page background colour and how to add pictures. Ask the children to start to retell the Roald Dahl story they have read. Tell them to import the illustrations they created in the last session into their book.	Children are able to produce their own books. Why have you chosen that font? Why have you used that illustration on that page? What does that illustration show the reader?
5	Children to create their	Ask the children to continue to work on their book. If they need to create any more illustrations they can do this by	Children are able to produce their

	own books.	going back into Brushes, creating their illustration and then saving it to the camera roll and importing it into Book Creator.	own books.
6	Create book and illustrate.	Children to finish their books this week, making sure they proof read their work. Ask the children to publish their book to iBooks and then give them the opportunity to show each other their version of the book. Ask the children to compare the list of reasons for having illustrations in a book with the illustrations they have included.	Children are able to publish their own books.

Further challenges and possible home learning activities:

Using the microphone within the Book Creator app ask the children to record each page of the story so other children can listen to them narrating the story.

Alternative Apps/Software to those recommended

Week 3:
- Brushes – Paint

Weeks 4 - 6:
- Book Creator - MS Publisher or Comic Life (for book creation)
- Brushes – Paint

KS 2 – Y3 (Ref: 21)

Apptivity Name: Class Democracy

Summary

This project begins by introducing the concept of democracy to the children. As the project progresses, children will be asked to create a bill for proposed legislation and create an animation and an endorsement to support their bill.

The project will culminate in children evaluating each other's work and completing a survey to express their views.

Key Computing Terminology:

Mind map: A mind map is a diagram used to visually outline information. A mind map is often created around a single word or text, placed in the centre, to which associated ideas, words and concepts are added.

Computing POS Reference:

- **IT2 -** Use search technologies effectively
- **IT3 -** Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information
- **DL5 -** Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

What is required?

Week 1:
- Internet access
- Website: http://www.citizenshipfoundation.org.uk/

Week 2:
- Internet access
- Website: http://www.parliament.uk/documents/education/online-resources/printed-resources/Parliament-laws-and-you-ks2-illustrated-booklet.pdf
- iPads - Popplet App

Week 3:
- Comic Life, Microsoft Word or Pages.

Week 4:
- iPads – PhotoSpeak

Weeks 5 - 6:
- Internet access
- Vimeo - https://vimeo.com

eSafety
- Digital Citizenship & Technology 2.3 & 2.4

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Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Introduce the concept of democracy and apply knowledge in class vote.	Introduce the concept of democracy (you, me and us) http://www.citizenshipfoundation.org.uk/ Children are given a task to compile a list of what they would change to make their community better. Create a list from the children's suggestions. Discuss and condense this list to the top 10 best suggestions. Children should vote with a show of hands.	Children apply what they have understood about you, me and us by thinking of ideas to improve their communities. Discuss and use democracy in action to decide top ten ideas. What does democracy mean?
2	Teams develop plan of action for bill.	Introduce the basics of how our political system works: bills, legislation manifestos, voting parliament etc. http://www.parliament.uk/documents/education/online-resources/printed-resources/Parliament-laws-and-you-ks2-illustrated-booklet.pdf Children are split into teams and allocated a colour. Each team is given one of the community suggestions from the previous week. Each team has to decide how they could make this idea happen and create a bill for proposed legislation using a mind mapping app such as Popplet. From this mind map teams are to develop a script to present their bill to class parliament. Formulate a campaign slogan.	Teams apply concepts learned so far to develop a bill using mind-map. Develop a script to present in animation. Develop a campaign slogan. Why are mind maps useful?
3	Plan and create resources to compliment their campaign	Teams to produce a poster to promote their proposed changes. This can be done in Comic Life, Microsoft Word or Pages. Show children some marketing posters, make the children aware of the colours used, different fonts used and the use of pictures to capture attention.	Why are you using that format? Why have you chosen that particular font? Are you using pictures in your poster? Why?
4	Create Animation	Teams to create an animation to promote their movie using 'Photospeak' or Chatterpix. These recording should be approximately one minute	What is the message you are delivering? Why do you think we

		long and should include them highlighting the issue they want to address and then presenting their solution. To do this they will need to prepare a script and get pictures of a politician or celebrities to endorse their bill. The children can use photos sourced from the internet.	are producing an animation to promote your message?
5	Saving and publicising	Children to finish their animation from the previous week. Children to consider how they are going to promote their video and poster. How can they use the internet to do this? Teams to share their animations on a video sharing website like https://vimeo.com using a school account or to their class area on the school website. Teams to include information about their animation in the description fields.	All work produced is emailed and shared on a social platform. Why are you using an online social platform to promote your message? How can you use the internet to promote a change?
6	Peer evaluation of animations	Teams to present their campaign back to the class and class to vote on whether to accept their reform or not. Teams to evaluate what they would do differently if they were given this task again.	Feedback and reflect on the campaigns the teams have developed.

Further challenges and possible home learning activities:

Children to research how the internet has affected democracy, for example what are ePetitions?

Alternative Apps/Software to those recommended

Week 2:
- Alternative to Popplet App – Microsoft Word or PowerPoint

Week 4:
- Alternative to Photospeak - Morfo booth (free iPad app) or for Windows PC/ laptop FotoMorph http://www.thewindowsclub.com/fotomorph-free-download

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KS 2 – Y3 (Ref: 22)

Apptivity Name: We Love Games

Summary
What goes into games design? In this Apptivity we will use gaming apps to develop computational thinking skills and develop a simple program as a final project.

One way to develop children's' algorithmic thinking skills is to use apps/games such as Flappy Bird. Children can spot the algorithms used to program these e.g. when the screen is touched the bird flies upwards. Another important computational thinking skill is decomposition, which is when we break down a problem into smaller problems to make it easier to solve. In the final project, children will learn about a range of inputs "When and Then" and introduces the concept of selection within algorithms.

Key Computing Terminology:
Computational thinking: It is a way of thinking that uses concepts and theories from computer science to solve problems.

Algorithms: An algorithm is a sequence of instructions and/or set of rules.

Simple Program: A sequence of instructions to perform a task.

Decomposition: Also known as *factoring*, refers to the process by which a complex problem or system is broken down into parts that are easier to conceive, understand, program, and maintain.

Sequence: A set of actions or events that must be carried out in the same order every time.

Input: Inputs are devices or code that send instructions to the computer and allows us to interact with technology.

Selection: It means 'to choose something'.

Computing POS Reference:
- **CS4** - Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
- **CS5** - Use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- **IT3** - Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information

What is required?
Week 1:
- Get Up Algorithm presentation – Ref 22.1
- Teacher choice:
  iPad apps: Pure Flow, Popplet OR
  PC/Mac: Flowol, Word

Week 2:
- Spot the Algorithm presentation – Ref 22.2
- iPads with access to Flappy Bird or Angry Birds.

Week 3:
- Let's Present the Game – Ref 22.3
- Teacher choice:
  iPad apps: Pure Flow, Popplet OR
  PC/Mac: Flowol, Word

Week 4:
- Inputs – Ref 22.4
- How to use Hopscotch video – Ref 22.5
- iPads with access to Hopscotch

Week 5:
- Inputs – Ref 22.4
- How to use Hopscotch part 2 video – Ref 22.6
- iPads with access to Hopscotch

eSafety

Not applicable

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	What is an Algorithm? Let's write an Algorithm!

Children are able to identify what an algorithm is.

Children can apply an algorithm to a real life situation. | Open the resource presentation "Get Up Algorithm" (Ref 22.1).

Explain that their task is to write an algorithm that records their step by step journey from waking up in the morning to getting to school. Children will use software or apps as the recording medium. Although this can be done on paper, children make so many mistakes that easy editing and rearranging is of real value.

Explain that they are going to work in a pairs but both of them should take it in turns to input information. Place children in pairs or allow them to pair up naturally as suits the needs of your class.

Demonstrate opening your chosen app, website or software (for example iPad apps: Pure Flow, Popplet or PC/Mac: Flowol, Word) for creating a flow chart algorithm.

Demonstrate creating an oval shape and adding text. Type in start and explain that start and finish are created using oval shapes. Demonstrate creating a couple of actions using rectangular shapes and adding text. Demonstrate linking each shape up with an arrow. | Children will be able to break down tasks into a sequence of steps and understand the importance of the order of the sequence.

They are able to think through the steps of an algorithm to predict the outcome.

Children will be able to use a basic flow diagram tool (Oval for start and finish, rectangle for actions, diamond for decisions).

What is an algorithm?

Why do we have to follow an algorithm in order?

What would happen if we changed this order? |
| 2 | Children are able to decompose an algorithm

Children can decompose a game into smaller parts | Open the resource presentation "Spot the Algorithm" (Ref 22.2).

Explain that their task is to examine what makes a game and to decompose a game. The children will save screen shots and produce an annotated collage detailing each element. This task is fully explained in the accompanying presentation.

A great task is to ask children to decompose games such as Flappy Bird, or Angry Birds into a set of smaller sub problems that a programmer may tackle.

In doing this you realise how simple some | Children understand what it means to decompose an algorithm and can decompose a game into smaller parts.

Children can use a collage app to document elements of a game.

What is an algorithm? |

		games are! E.g. for Flappy Bird there are only really 4 parts to the entire game: 1. The game scrolls when play has been pushed. 2. Flappy Bird flies upward when the screen is pushed and decants at all other times 3. The game ends if Flappy Bird hits a pipe. 4. You score a point every time you pass through a pipe.	
3	Children can alter or improve an algorithm.	Open the resource presentation "Let's Present the Game" (Ref 22.3). Start by reviewing the "Spot the Algorithm" lesson. Then ask children to act out the games using drama and therefore bringing the algorithms to life. They could then introduce their own additional algorithms to alter the game. Use flow chart software (such as Pure Flow, Popplet OR PC/Mac: Flowol, Word) to create and amend algorithms. For example, when the bird flies through two consecutive pipes they score a bonus point.	Children are able to demonstrate an understanding of algorithms. How did you improve the game?
4	Understand what an input is and how it can trigger events and what role it plays in an algorithm.	Open the resource presentation "Inputs" (Ref 22.4). This lesson uses the Hopscotch app to explore a range of inputs that can be used within the app. Introduce the word input and explain to the children that inputs are important as they allow the user to interact with technology. Explain that when a user interacts with the input, a message is sent inside the application or item of technology to make an action happen. Open the Hopscotch app and demonstrate the input options, see video "how to use hopscotch" (Ref 22.5). Show the children that at the top of the programming area there is a drop down menu, which currently displays 'When play button pressed'. *Click this menu to reveal*	What is an input? How does an input act as a trigger? A trigger for what? What different inputs can you name?

		the options available. Ask children to predict what will happen for various inputs. Lead a discussion with children on what inputs they can see on pieces of technology in the classroom around them. Write up their responses on a flipchart/board and discuss these – children may notice the interactive whiteboard, keyboard, mouse etc.	
5	Let's Create! Use a range of inputs and selection within an algorithm. Create basic game using Hopscotch.	Open the resource presentation "Inputs" (Ref 22.4). Explain to the children that they are going to create a simple program (game). Connect the iPad to the interactive whiteboard, launch Hopscotch and recap how children created a new program and selected an object (character) for their program. See video "How to use Hopscotch Part 2" (Ref 22.6) Once you have modelled the activity, give the children time to create their own game.	How have you programmed your character? What would happen if you changed that instruction?
6	Discuss programming environments	Choose a selection of the games created and play them for the rest of the class, asking the child to explain what is going on in their program. Take photographs or record the children's presentations.	What have you learnt? What would you do differently next time?

Further challenges and possible home learning activities:

Hopscotch is a free app so if they have Tablets at home ask them to download it and then play some of the games that are part of the app – ask them to look at the code and see whether they can understand it. Ask them to break down the code to explain what a block of code does.

Alternative Apps/Software to those recommended

Week 2:
- Angry Birds app – online version

Weeks 5-6
- Hopscotch app – MS Logo

KS 2 – Y3 (Ref: 23)

Apptivity Name: Big Robots

Summary:

The project will reinforce children's understanding of directional language and programming. Children are able to understand and explain the meaning of algorithms and the importance of order and accuracy.

The final lesson will provide children with the opportunity to write their own algorithm. Children will understand how to be able to break down tasks into a sequence of steps and understand the order of sequence.

Key Computing Terminology:

Algorithm: An algorithm is a sequence of instructions and/or set of rules.

Computing POS Reference:

- **CS4 -** Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
- **CS5 -** Use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- **CS6 -** Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
- **DL5 -** Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

What is required?

Week 2:
- Probots (Floor Robot)
- A3 (or large) paper

Week 3:
- iPads – Hopscotch app

Week 4:
- Pen and paper

Week 5:
- iPads – Pureflow app
- Flowchart Symbol Reference Card – Ref 23.1
- Pen and paper

eSafety
Not applicable

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Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Children can identify what directional language. Children can use a programmable resource to support learning.	Remind children of previous Bee-Bot lessons and recap the terminology that they used – forwards, backwards, left, right, go, clear and program. Like the Bee-Bot, a Pro-Bot can be programmed using the four arrow keys. By default, pressing ↑ or ↓ will move the robot 25cm and pressing ← or → rotates 90°. In pairs, ask children to direct their partner using appropriate terminology and using the degree of angle when turning left or right. Give pairs a simple program of ↑→ ↑→ ↑→ ↑→ - what shape do they walk in? Ensure children note the following abbreviations so they are recognisable and embedded for later use when programming a Pro-Bot: Forward – Fd Backward – Bk Right turn – Rt Left turn – Lt Repeat – Rpt[ ] Pause – Ps	Children are able to recognise, use and understand directional language, abbreviations and sequence instructions. Children able to identify degree of angle and alter distance. Which direction is....? Why do we have to follow instructions? Why is the order of instructions so important? What happens if this angle is changed....? What happens if you change this instruction?
2	Children can program a floor robot. Enter a sequence of instructions to move a floor robot to a designated point incorporating turns. Use the repeat key to produce symmetrical	Explain to the children that the Pro-Bot will only do what they instruct it to do. Using sheets of flip chart paper, insert a pen in the centre of the Pro-Bot and ask children to program the Pro-Bot to follow a square. Rather than typing 8 commands into the Pro-Bot, demonstrate how to use the Repeat function to make the program simpler. Rpt [4↑→] Once they have mastered a square, try other shapes – altering distances	Children able to recognise that a string of instructions or commands placed together can create a simple program. Without this programme then the robot would not move. Can program a floor robot without the help of an adult. Can write a list of commands to produce a pre-drawn shape and amend instructions as required. What do we use the repeat function for?

	shapes. Write a list of commands to produce a pre-drawn shape and amend instructions as required.	and angles, for example forward for 37 cm, ↑37 or turn left 30°, ←30 Triangle: Rpt[3 ↑→ 120] Pentagon: Rpt[5 ↑→ 72] Hexagon: Rpt[6 ↑→ 60] Octagon: Rpt[8 ↑→ 45] Circle (approx): Rpt[20 ↑ 1 → 18] *Tip – to work out how many degrees to turn, divide 360 by the number of sides in the polygon.*	What would happen if we changed.....? What else do we give instructions to?
3	Hopscotch (iPad app). Children to use an iPad application to draw shapes.	Introduce children to the iPads. Demonstrate how to use Hopscotch. Add new project - choose a character - Start. Explain the different commands on the left hand side. Drag and drop commands into the right hand side to create a program or script. Alter distances and angles of rotation. Example - to create a square; Move with trail distance 300 Rotate 90 Move with trail distance 300 Rotate 90 Move with trail distance 300 Rotate 90 Move with trail distance 300 Rotate 90 Next, introduce the Repeat command to minimise number of entries. Repeat times 4 Move with trail distance 300 Rotate 90 End Challenge children to create different shapes.	Children are able to recognise that a string of instructions or commands placed together can create a simple program. Without this programme then the robot would not move. Can program the iPad application without the help of an adult. Children able to alter distance and angles to create different shapes and sizes of shapes. What instructions have you given your character? What happens if you take this line out of the instructions? What do we use the repeat instruction for? Why do we use the repeat instructions?
4	What is an algorithm? To familiarise children with the meaning of algorithms and the need for	Start the lesson by explaining that an algorithm is simply a sequence of instructions and that humans and computers follow algorithms to complete tasks. Or in other words, a list of instructions of how to do something, with orders and decisions. Highlight the fact that	Children are able to understand and explain the meaning of algorithm and the importance of order and accuracy. Children able to identify algorithms in everyday life.

	them to be precise and accurate	these algorithms needs to be precise and accurate as computers are not very intelligent and only do exactly as they are told – just as the Bee-Bot, Pro-Bot and iPad apps did. Give examples e.g. step-by-step recipes are algorithms. Ask children to write down instructions for simple tasks such as making a sandwich. This needs to be step-by-step including any decisions that have to be made during the process.	Children are able to break down tasks into a sequence of steps and understand the order of sequence. What is an algorithm? Why is the order of instructions important? What is a sequence? Can you give me an example of an algorithm?
5	Writing an algorithm. Pureflow	Instructions or algorithms can be created and displayed in different ways, for example in the form of a flowchart. Show children different symbols that they will need to use when creating a flowchart. See Reference 23.1 to see the symbols used and example diagrams. Oval – Start/End Arrows – This line is the connector that shows the relationship between the shapes Rectangle – Represents a Process Diamond – Indicates a Decision Parallelogram – Input/Output Using Pureflow, ask the children to recreate their instructional writing from the previous lesson in this graphical layout.	To think algorithmically: Children are able to break down tasks into a sequence of steps and understand the order of sequence. Children are able to think through steps of an algorithm and predict the outcome. Children are able to adjust an algorithm if it isn't performing as required. Children are able to use basic flow diagram tools. What does an oval represent? What does a rectangle represent?

Further challenges and possible home learning activities:

Not applicable

Alternative Apps/Software to those recommended
Weeks 1 - 2:
- Any Floor Robot

Week 3:
- Alternative to Hopscotch app – MS Logo

Week 5:
- Alternative to Pureflow app - Flowol or Microsoft Word/ PowerPoint

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We recommend delivering this project in 2 x ½ day sessions.

KS 2 – Y3 (Ref: 24)

Apptivity Name: My First Program

Summary:

This lesson plan will take you through the necessary steps to create your very first computer game in Scratch. This will involve creating your own sprites/graphics and background images. The character will choose a random number between 1 to 100 and it's the player's job to guess the number selected. Each guess will be tested to see if it is correct or if the player needs to go higher or lower with their next guess.

Key Computing Terminology:

Sprites: A sprite is a 2D image that is integrated into a computer game in a layered effect.

Conditional Statements: Can also be described as a *Conditional Expression,* they are features of coding that perform different computations or actions depending on a specified condition being either *True* or *False.* For example using the ***if then else*** construct, **If** t*he following Condition* is *True* **Then** do t*he following instructions* **Else** *do these different instructions*.

Looping: A loop is a sequence of instructions that will be continually repeated until a ***Conditional Statement*** is reached or becomes true. Using loops is a way of asking a question until something (*conditional statement*) becomes true.

Variables: Variables are used to store information within computer code, each Variable will have a unique name and it will hold a known or unknown quantity or value. For example the number of points scored by each player would be stored in a variable.

Computing POS Reference:

- **CS4 -** Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
- **CS5 -** Use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- **IT 3 –** Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.

What is required?

Weeks 1-6:
- Open the resource "My First Program – Lesson Guide" - Ref 24.1
- Laptops
- Scratch

eSafety
Not applicable

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Understand what a sprite is and create their own sprites in Scratch.	**Scratch and Sprites** Open the resource "My First Program – Lesson Guide" (Ref 24.1). Demonstrate the Scratch user interface and show the children how to create their own sprite in Scratch. Ask the children to create their own sprite (Activity 1 in the guide).	Children understand what a sprite is. What is a sprite? How did you create your sprite?
2	Create their own background image for the stage.	The Stage: Open the resource "My First Program – Lesson Guide" (Ref 24.1). Demonstrate the Stage in Scratch and show the children how to use the paint editor to create their own stage. Ask the children to create their image for the stage (Activity 2 in the guide).	Children understand what a stage is. What is a stage? How did you create your stage?
3	Create a variable and ask user for their input.	Variables & User Input: Open the resource "My First Program – Lesson Guide" (Ref 24.1). Demonstrate the use of variables and how to create them in Scratch. Explain the use of user input and how to create a program that accepts input from the user. Ask the children to create a variable for their game (Activity 3 in the guide). Ask the children to build in user input to their game (Activity 4 in the guide).	Children understand and can explain how variables and inputs are used. What is an input? What is a variable? What do we mean by user input? How did you make your sprite?
4	Use random numbers from 1 to 100 in a program. Use a loop to make a sprite	Random Numbers & Loops: Open the resource "My First Program – Lesson Guide" (Ref 24.1). Explain the use of Random Numbers and how they work in Scratch.	Children understand and can explain how loops and random numbers are used. What is a loop?

| | | move. | Explain Loops in computer programming and what they look like in Scratch.

Ask the children to include the Random Number code block in their program (Activity 5 in the guide).

Ask the children to begin to build loops within their game (Activity 6 in the guide). | What is a random number?

Can you give me an example of a type of loop?

Which blocks of code have you use to make your sprite do that?

What happens if you change this code block.....? |
|---|---|---|---|---|
| 5 | Use a conditional statement to check the answer the user has given. | Conditions and Operators:

Open the resource "My First Program – Lesson Guide" (Ref 24.1).

Explain conditional statements and how they are used in programming.

Ask the children to begin to build conditions into their game (Activity 7 in the guide). | Children understand and can explain how conditional statements are used.

What is meant by a conditional statement?

Can you give me an example of a conditional statement? | |
| 6 | Use operators to compare the answer given in order to give clues to the user. | **Conditions and Operators**

Open the resource "My First Program – Lesson Guide" (Ref 24.1).

Explain the use of operators and how they are used within conditional statements.

Ask the children to use operators to form comparisons and complete their game (Activity 8 in the guide.) | Children understand and can explain how operators are used.

What is an operator? Can you give me an example of an operator? | |

Further challenges and possible home learning activities:

Ask the children to write some explain sentences about the new skills that they have developed, for example 'an operator is.........', 'you would use a conditional statement to.........' etc.

Alternative Apps/Software to those recommended

Not applicable

Year 3 (Ref: 301)

Apptivity Name: Going for Gold (My Body, My Fitness)

Summary:

Sixty minutes per day is the minimum amount of physical activity recommended for children aged 6 to 17 by the Centers for Disease Control and Prevention. Some children need a little encouragement to step away from their electronic devices so they can get active. Thankfully, devices can now be used to encourage children to get active.

Children will create a "My body, My fitness" e-book, which will document each week a personalised "Going for Gold" record. By using the ideas behind growth mindset, this apptivity will help the children understand body and mind fitness by setting personal goals and building up children's resilience.

There are lots of videos on the NHS website to encourage children to get active, which can be done in the last ten minutes of a session https://www.nhs.uk/10-minute-shake-up/shake-up-zone (app available) or Go Noodle (https://www.gonoodle.com/) offers similar age appropriate activities.

Key Computing Terminology:

eBook An electronic version of a printed book which can be read on a computer or a specifically designed handheld device.

Computing POS Reference:

- **IT3 -** Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information

- **DL5 -** Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

What is required?

Week 1:
- iPads with Book Creator and Brushes
- Going for Gold Template (Ref: 301.1)

Week 2:
- Presentation Ref 301.2
- Internet access
- iPads with Book Creator and Chatterkid.
- Going for Gold e-book saved from last session.

Week 3:
- Presentation Ref 301.3
- Internet access
- iPads with Book Creator and Eat-And-Move-O-Matic app.
- Going for Gold e-book saved from last session.

Week 4:
- Presentation Ref 301.4
- iPads with Book Creator
- Going for Gold e-book saved from last session.

Week 5:
- NHS Infographic Ref 301.5
- iPads with Book Creator
- Going for Gold e-book saved from last session

Week 6:
- iPads with Book Creator
- Going for Gold e-book saved from last session
- Access to school hall/playing field
- Video cameras

eSafety
- Digital Citizenship and Technology 2.1

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Introduce the project and complete front cover.	Introduce this project by explaining that we will be making a 'Going for Gold' e-book all about them. Children will open up the Going for Gold template (Ref 301.1) in Book Creator. Then follow these steps: 1. Take a picture of themselves using a camera/ iPad. Make sure it is a full length shot in a pose like they have just won a gold medal. 2. Import the picture into Brushes and then using the rubber tool, rub out the background (so only the child is visible). 3. Save their drawing in brushes re-open Book Creator and place their photo on the top of the podium on the front cover. 4. Personalise their front cover with their name, school, class etc. Ask the children to save their book for next week.	Take a photo for their self portrait. Complete the front cover.
2	Why is keeping fit and being active good for you?	Discuss with the children how sport can be good for your body and your mind. (Presentation Ref 301.2) Ask the children to open their Going for Gold e-Book and complete page 2. To do this, firstly the children must find pictures on the internet of a sports star who inspires them and save them to their camera roll. Next, ask the children to write a script about the sports star which they must then record using the Chatterkid app. Ask them to include what they have learned about how sport can help the body and mind. e.g. My name is Jessica Ennis and when I compete I feel happy. I like to challenge myself to improve, to do this I practice every day which gives me a sense of achievement. Save the video and import into page 2	Be able to identify how being fit and active can benefit your body and mind. Create a script from what they have learned Use Chatterkid app to record their app and import into their e-book.
3	How nutrition can play a part in keeping us fit and healthy.	Show the 'Food is fuel, good and bad fuel' presentation (Presentation Ref 301.3) which illustrates what food will give you energy and keep you full and what food will do the opposite. Page 3 and 4: Using the iPads, children will look up the food they eat on the Eat-And-Move-O-Matic app to find out how many minutes of activity they will need to do to burn the calories in e.g. a Mars bar. Ask the children to complete page 3 which is the food	Children will be able to identify what good and bad foods they eat. Using the Eat-And-Move-O-Matic app to find out how long it

		they like. The children will need to find an image of food they eat and write next to it how many minutes of activity it will take to burn it off. Ask the children to complete page 4 and list healthy food options and how many minutes of activity it will take to burn these foods off.	will take to burn off the food they like.
4	Why they started the Olympics?	Show (Presentation Ref 301.4) - Can I be an Olympian? Introduce the idea that everyone can have an Olympic mindset. Some examples are. • Believe in yourself (you can do it) • Try as hard as you can • Practice makes perfect Explain how positive mantras can change your mindset - It's not about being the best, it's being the best that you can be. Ask children to complete page 5, they need to write about how they can apply the Olympic mindset to areas of their school and home life.	Understand the Olympic mindset and how it can help them achieve in school and at home.
5	Collecting our health data.	Introduce what data is and what is health data. Discuss how we can measure if we are getting fitter and healthier. Ask children to design their own keep moving plan. Using the timetable template on page 6, the children can log the activities they do throughout the week so they can see if they are doing 60 minutes a day. Ask children to complete page 7. Children look at other activities they can do to keep active (See NHS Infographic Ref 301.5) and then other activities they would like to try (setting their own achievable goals).	Understand what health data is.
6	Lets get moving.	Using the school hall/field, ask the children to film each other playing games. These could be based on what sports equipment the school has e.g. Design an obstacle course Musical statues Football Rounders Ask the children to add their short film to page 8 and write a short message like "this is me having fun and being active" and describe what they are doing.	

* Their Going for Gold record can be kept and updated every term/year

Further challenges and possible home learning activities:

Ask the children to invent their own game, this could be based on an existing game or something completely knew. Ask them to add a page detailing their new game in the book ask them to consider what is the purpose of the game, what are the rules etc.

Alternative Apps/Software to those recommended

Pic Collage instead of Book Creator

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Year 3 (Ref: 302)

Apptivity Name: Young Coders (Learn, Code and Create!)

Summary:

In this computing activity we will experiment with a range of computer science activities.

Key Computing Terminology:

Algorithm An algorithm is a sequence of instructions and/or set of rules.

eBook An electronic version of a printed book which can be read on a computer or a specifically designed handheld device.

QR Code A machine-readable code consisting of an array of black and white squares, typically used for storing URLs or other information for reading by the camera on a smartphone.

Computing POS Reference:

- **CS4 -** Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
- **CS5 -** Use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- **IT 3 –** Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.

What is required?

Week 1:
- Access to http://www.bbc.co.uk/guides/z3whpv4
- Young Coders learner's booklet (Ref 302.1)
- Additional Resources – access to http://www.bbc.co.uk/guides/z3whpv4

Week 2:
- Young Coders learner's booklet (Ref 302.1)
- iPads with LightBot (or you can go online https://lightbot.com/hocflash.html)

Week 3:
- Young Coders learner's booklet (Ref 302.1)
- Access to:
    - https://studio.code.org/s/frozen/stage/1/puzzle/1
    - https://code.org/starwars
    - https://code.org/mc

Week 4:
- iPads with Tynker or access to the online version https://www.tynker.com/hour-of-code/
- Useful link: https://www.tynker.com/courses/mobile/tynker-app-teacher-guide.pdf

Week 5:
- Young Coders learner's booklet (Ref 302.1)
- iPads with either SketchNation, Floors or Bloxel or access to http://sketchnation.com/ if you don't have iPads.
- http://www.bbc.co.uk/guides/zw96tfr
- Useful Links:
    - http://sketchnation.com/getting_started.html
    - http://www.projectpixelpress.com/floors/
    - http://www.bloxelsbuilder.com/howitworks/

Week 6:
- iPads with Book Creator
- **Useful links:**
    - https://www.youtube.com/watch?v=znrlTHDzr6s

eSafety
- Digital Citizenship and Technology 2.1 & 2.3

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Create a basic algorithm by sequencing events in order.	**Computational thinking** 1. Tell the children we are going to learn about one of the most powerful words in the world as it controls how all of the computers in the world work - ALGORITHM! 2. Watch this video with the class http://www.bbc.co.uk/guides/z3whpv4 3. What is an Algorithm? An algorithm is a list of rules to follow in order to solve a problem. Give an example - "Getting ready for school algorithm". Use "Getting ready for school algorithm" on the interactive board with the class. 4. Print out the Young Coders learner's booklet (Ref 302.1), this booklet will help document the unit of activities and includes the coding tasks. 5. In the first task, the children will write their own algorithm. See learner's booklet task 1 - How to draw a crazy character Algorithm: - First you (the teacher) draw a crazy monster character on the board. (Don't forget to name your monster). - Now write an algorithm (set of instructions) for "how to draw your crazy monster character." - You may need a word bank: arms, legs, nose, body, eyes, antennas, tentacles, teeth, claws, hairy and mouth. - Ask the children to draw their own monster in their booklets complete with algorithm instructions. Then a friend must attempt to draw their monster following the algorithm. - Did it work? How many look like the original? - Sum up by discussing the fact that algorithms need to include detail and have complete step by step instructions to work. **Additional Resources:** BBC Bitesize has great extension activities http://www.bbc.co.uk/guides/z3whpv4	LO 1. An algorithm is a list of rules to follow in order to solve a problem
2	Understand how to create and give a computer a set of instructions to follow.	**Using Lightbot App** This lesson follows on from the idea of algorithms as sets of instructions. Children must use Lightbot to understand how to create and give a computer a set of instructions to follow. 1. Give quick demonstration of how to open and use Lightbot.	

		2. Ask the children to follow the instructions and tasks in the Young Coders learner's booklet (Ref 302.1) If you don't have access to iPads then you can use LightBot online.	
3	Understand the basics of visual coding.	**Movies & Coding** The Hour of Code website is full of great games and lessons to get children coding. 1. Children should choose one of the following coding games to explore : Frozen: Use drag-drop blocks. - https://studio.code.org/s/frozen/stage/1/puzzle/1 Star Wars: Use drag-drop blocks. - https://code.org/starwars Minecraft : Use blocks of code to take Steve or Alex on an adventure through this Minecraft world. — https://code.org/mc 2. Ask children to reflect on playing the coding games in the Young Coders learner's booklet (Ref 302.1). *Teachers can sign children up to the Hour of Code website, which then tracks their progress and allows them to save games.*	
4	To build on existing knowledge of visual coding and challenge children to advance their skills.	**Coding Puzzles** Tynker is a collection of "programming puzzles" that teach children coding. Simply have the children open the app or visit the website and work through the puzzles. They start very simple and progressively get more challenging. The final puzzle is to build a game, this could be set as an extension activity or free time challenge. **Useful link:** Teacher Guide: Hour of Code with the Tynker App	
5	Understand what makes a good game and how to create and share games.	**Creating and sharing games** Choose one of the 3 apps: SketchNation, Floors and Bloxel that can be used to create games. 1. Discuss with the class what makes a good game? BBC Bitesize: What makes a good computer game? 2. Using the Young Coders learner's booklet (Ref 302.1), ask the children to plan their game. They will have to create a hero, villain and a world or place for the game to be set. 3. Demonstrate your chosen app and the basics of creating a game. 4. If you wish, children can share their games online.	

		You may wish to get younger children to play them and then vote for the best game. **Useful Links:** How to use Sketch Nation - http://sketchnation.com/getting_started.html How to use Floors - http://www.projectpixelpress.com/floors/ (download and print out the game sheets and teacher resources) How to use Bloxels - http://www.bloxelsbuilder.com/howitworks/ (additional building boards may need to be purchased)	
6	Storytelling	**Reflection and storytelling:** Using Book Creator ask the children to write a learning journey based on what they have done and learnt including lots of photos and recordings. Ask the children to reflect on their learning successes. This video may be useful if you need to demonstrate the use of Book Creator: https://www.youtube.com/watch?v=znrlTHDzr6s	

Further challenges and possible home learning activities:
Ask the children to continue with the Hour of Code challenges or Tynker lessons.

Alternative Apps/Software to those recommended
Alternatives given within lesson plan.

Week 6: PowerPoint or any similar software/app that allows the children to write their learning journey.

YEAR 4

Curriculum Links – YEAR 4:

Activity	Eng	Maths	Sci	PE	Art & Design	D&T	Geog	His	Music	PSHE	RE	MFL
We built this city	X	X			X	X				X		
Final score	X											
Back to the Future	X					X		X		X		
Making Games					X							
Hurray for Hollywood	X				X							
Interface Designer	X											
Heroes												
We've got the Power	X				X				X			

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KS 2 – Y4 (Ref: 25)

Apptivity Name: We Built This City

Summary

In this Apptivity we will encourage children to create their own 3D world and challenge them to consider everything this entails.

Key Computing Terminology:

Simulation: The technique of representing the real world by a computer program

Algorithm: An algorithm is a sequence of instructions and/or set of rules.

Flowchart: a diagram of the sequence of movements or actions

Computing POS Reference:

- **CS4 -** Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
- **CS5 -** Use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- **CS6** - Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
- **DL5 -** Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

What is required?

Weeks 1:
- Pen and paper
- iPads - Toca Builder App

Week 2:
- Lego
- Flowchart Symbol Reference Card – Ref 25.1

Week 3 - 6:
- *Teacher Reference link – http://minecraftedu.com/wiki/index.php?title=What_is_Minecraft%3F*
- Video introduction to Minecraft for Teachers – Ref 25.2
- Pen and paper
- Minecraft

eSafety
- Digital Citizenship & Literacy 2.1, 2.2, 2.3 & 2.4

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Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Introduce the world of simulations.	Show examples of simulations e.g.: • SimCity /SecondLife/Minecraft = gaming and learning applications • Flight Sim = Pilot training, astronaut training • Health Sim = helps train doctors and nurses Introduce some of the language used in this sector e.g. serious gaming is, 2D and 3D. Activity (15 minutes) Ask the children to draw a 3D house, they get a point for every real artefact they draw e.g. windows, doors a roof etc. (This activity should illustrate how hard it is to draw a 3d house with detail. Minecraft would be better for purpose.) Discuss what the advantages / disadvantages for using simulators are. Especially for health and education. Ask the children to use a simple build program like Toca Builder app (iPad) so children can learn how to build in a 3D environment. Give them 10 minutes to build something.	Introduce the concept of simulations and what they are used for. Identify the uses of simulators and the advantages and disadvantages of using one. Children build something using a basic build program. What do we mean by 3D? What are the advantages to using computers software to produce 3D simulations?
2	Introduce concept of algorithms.	Using Lego pieces, groups of children must build a Lego creature. Introduce how to write an algorithm using flowchart methods. (See Ref 25.1 for flowchart examples.) Groups must design a flow chart to program their creature to walk in the shape of a square (or other shape) e.g. creature must move forward 10 paces, creature must turn 90 degrees.	Children will be able to build a Lego creature. Children can produce an algorithm to program their Lego creature. Identify how materials behave in a 3D world (Minecraft). What would happen if we change the order of this algorithm? How do the artefacts know their own value?
3	Plan what and how	If you are unfamiliar with Minecraft, we have included a short video introduction to Minecraft	Discuss what children already understand about

	children will build a city in Minecraft.	for teachers (Ref 25.2) and you may want read this article: http://minecraftedu.com/wiki/index.php?title=What_is_Minecraft%3F "The game is considered a "sandbox" game. Minecraft is an open world game that has no specific goals for the player to accomplish while in default settings" http://minecraftedu.com/wiki/index.php?title=What_is_Minecraft%3F Discuss what the point of the game is. How do people know what to do when they enter the game? Are there predefined rules agreed by participants before hand, if so what are they? Group Minecraft activity: tell each group that they will use Minecraft and their objective is to build a new city that they would like to live in. Discuss what would make a good city? What amenities would you need? What would we call our city? Ask each group to create a crib sheet of jobs to be completed. As a class, they must decide on some rules to help them achieve their objectives e.g. don't knock each other's buildings down. Decide what happens if somebody breaks the rules.	the game play in Minecraft. Introduce design brief and discuss ideas. Class create ground rules for in game behaviour. Why have you chosen to build....? For what would you use 3D modelling in future? What are your rules?
4	Children build their own city.	Decide who will be building what in the new city using the crib sheet from last week. Assign jobs to each child. At the end of the session, complete a progress report by ticking off jobs to be done.	Children are given jobs to complete. Children start completing their tasks
5	Children build their own city.	Carry on work from last week.	Children complete their tasks.
6	Finish building the city.	Children finish the city and present what they have designed in a city tour format by creating a screen recording. Discussion and evaluation. What would they do differently next time and maybe what they would like to improve about Minecraft. What materials would they have liked to have used that did not exist with-in the program.	What would you do differently next time? How did you navigate through your city? What materials did you make use of?

Further challenges and possible home learning activities:

Ask the children to write a description of their new city for people who have never visited it? What is there to do? Why would people want to move there? What scenery is there? What does it smell like? What is the climate like?

Alternative Apps/Software to those recommended

Week 1:
- Alternative to Toca Builder app – Chrome Builder (would need to download the free web browser Chrome first)

Week 2 - 6:
- Alternative to Minecraft – Chrome Builder (would need to download the free web browser Chrome first)

KS 2 – Y4 (Ref: 26)

Apptivity Name: Final Score

Summary

In this project, children will analyse and discuss sport reports using examples from the internet. Working in groups, the children will create their own sports news report which they will share and work on together online using Dropbox. Finally, each group will present their report to the class followed by an evaluation.

Key Computing Terminology:

Not applicable

Computing POS Reference:

- **IT2 -** Use search technologies effectively
- **DL4 -** Be discerning in evaluating digital content
- **DL5 -** Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

What is required?

Weeks 1 - 6:
- Internet access

Week 3 - 6:
- Dropbox
- Microsoft Word or Pages

eSafety
Not applicable

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Analyse and discuss sport reports on the internet.	Introduce how the media reports on sporting events. Show the children examples of how reporting is used e.g. live commentary of a football match on the radio or clip of "Match of the day." Discuss how the language used differs from live to post match commentary. Also what would contribute to how commentators describe what they are seeing or have seen. Introduce bias and how this can be used to communicate opinions. In groups find 2 examples of sports reporting on the internet and decide if the language has bias, then feedback to the class.	Identify types of media reports. Determine what factors would influence commentary including bias. How is technology used to report on sporting activities? What are the different ways of communicating sport? What is bias?
2	To identify a style/tone through research.	Working in teams of 4/5 they must decide on a sporting event they would like to write about (something in the near future). Research other similar reports and look at how on-line newspapers evaluate the match as opposed to a football club or fans website. Deconstruct the text and find out the elements e.g. opinion or fact and do they interview others and find out their views. From this analysis decide on a style/tone of reporting. The group needs to divide up the work equally. Maybe write a review of 20 minutes each from the match.	Identify sporting events. Research how a sports event is reported and how it is written. Decide upon division of tasks. How is technology used to report on sporting events? What are the different ways you are able to follow sport via the internet? What are the differences between the various platforms for reporting on sporting events?
3	Work together to produce appropriate interview questions. Set up an online collaborative working space	Again in their groups they must finalise a list of questions they will use. To give their report depth they should use descriptions e.g. about the weather, the ground and the mood of the fans, for example "it's a miserable day here at Anfield. The ground is soaked through, lets hope the excited fans can lift the player's spirit".	Create some notes and share on-line with group. What questions are you going to ask? Why have you chosen those questions?

		Key questions: Who scored? Where there any red cards or any bad tackles etc. Groups need to create a shared space online so they can all share notes and any written work. To do this they can use Dropbox. Groups will write up the match using the questions they agree at this stage.	What else could you use dropbox for?
4	Produce a 'match' report.	This lesson should happen after the match or sports event. Groups must access their notes from the website and start to pull it together into one report. As they are going to be working on the same document, it is advisable they all take a turn each to work on it. In Drop-box you have to download and upload the finished document.	Access their on-line documents. Work as a group on the report. Are you using appropriate language, using past tense for example? What descriptive words are you using? Where are you getting your information from?
5	Produce a 'mach' report.	Make any amendments to grammar and spelling and format the document in line with a newspaper format. Children can use a template in Microsoft Word or Pages. Ask children to think about the Fonts they are using – use different fonts for headlines etc.	Children are able to 'proof' their own documents. Why have you used that font? Why have you presented your report in that style?
6	Show tell presentation	Children present extracts from their report to the class. Followed by an evaluation of how the groups found the process. Questions for consideration.	Groups present their work Why did you pick this sporting event? What would you do differently next time?

Further challenges and possible home learning activities:

Children to produce a report on another event or film, applying the changes they have identified. This time individually rather than as a group.

Alternative Apps/Software to those recommended

Not applicable

KS 2 – Y4 (Ref: 27)

Apptivity Name: Back to the Future

Summary

In this project, children will create their own blog detailing what they learn from research that they will complete throughout the six sessions. Children will learn about different technologies both old and new, about inventors and the different components of a computer.

Key Computing Terminology:

Wiki: A website developed collaboratively by a community of users, allowing any user to add and edit content.

Augmented Reality: a technology that superimposes a computer-generated image on a user's view of the real world, thus providing a composite view.

Computing POS Reference:

- **CS8 -** Appreciate how [search] results are selected and ranked
- **IT2 -** Use search technologies effectively
- **IT3 -** Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information

What is required?

Week 1:
- Internet access
- Websites:
  https://www.youtube.com/watch?v=1aiIeBcKBi8 or
  https://www.youtube.com/watch?v=UFwWWsz_X9s

Week 2:
- Internet access
- Online blogging account - https://www.edmodo.com
- Edmodo Video Tutorial – Ref 27.1

- *Reference link:*
  http://en.wikipedia.org/wiki/Collaborative_writing

Week 3:
- Internet access
- Websites:
  https://www.youtube.com/watch?v=AkFi90lZmXA or
  https://www.youtube.com/watch?v=4eNTlwnnhss
  https://www.wikispaces.com
- iPads – Thinglink app
- Teacher Reference:
  http://www.youtube.com/watch?v=jA8TIVSSSWY
- Edmodo

Week 4:
- Internet access
- http://www.bbc.co.uk/webwise/0/22562913
- Laptops or tablets for internet research
- Edmodo

Week 5:
- Internet access
- Edmodo
- Laptops or tablets for internet research
- Websites:
  http://www.howstuffworks.com/augmented-reality.htm
  http://en.wikipedia.org/wiki/Augmented_reality
  http://mashable.com/2013/03/28/3d-printing-explained/
  http://www.telegraph.co.uk/science/10158886/Scientists-print-3D-bionic-ear.html
  https://www.codeclub.org.uk
  http://www.youngmakers.org
  http://en.wikipedia.org/wiki/Maker_culture
  http://science.howstuffworks.com/nanotechnology.htm
  http://en.wikipedia.org/wiki/Nanotechnology
  https://www.wikispaces.com

eSafety
- Digital Citizenship & Technology 2.2, 2.3, 2.6 & 2.7

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Introduce the changes in technology over time	Children to watch a short film illustrating the timeline of technological milestones. Examples: https://www.youtube.com/watch?v=1aiIeBcKBi8 or https://www.youtube.com/watch?v=UFwWWsz_X9s Show examples of old technology to see if the children can guess what they are e.g. old mobile phones, VHS tapes or floppy discs. Discuss how technology is becoming smaller and more advanced over time. For example, introduce the concept of Moore's law (the number of transistors on a microchip doubles every 18 months to two years, which is why technology is getting smaller). The transistors on Intel's chips are so tiny that they are not visible to the naked eye. Tell the children that they will be creating a blog using Edmodo to publish research that they will be gathering over the next 5 sessions.	Children understand that technology is evolving and becoming more advanced. Children are familiar with Moore's law as a concept. How has technology changed over time? What is a blog?
2	Research Inventors of key technologies	You as the teacher will need to set up an Edmodo (https://www.edmodo.com) account which is a free, online learning space designed especially for schools. This can be accessed on iPads or desktops via the web. Whilst it may look like Facebook, it is much more child-friendly. Children can only access and send messages to their whole year group - they can't send private messages to each other and no strangers can 'friend' them. Messages may also contain attachments - uploaded files, pictures or website links. This enables them to learn the benefits of digital communication in a safe environment. Watch the video tutorial (Ref 27.1) on how to set up and add/invite your class. Don't worry it's quite easy. Ask the children to log on to Edmodo using the class code and then ask them to set up a user name and password. This might be easier if it was completed in small groups. Next, tell the children that they will be looking more closely at key inventions (the telephone, photographic camera, television and computer) that have led to the technology we know today. Children are to work in small groups to research one of the above inventions. There research should include the following information.	Children research a particular invention and document findings their wiki. Why do we use online blogs and wikis? What is a blog? What is the advantage of using blogs?

- Inventors name and other useful facts e.g. date of invention.
- Photos/illustrations of the invention
- How the technology was initially used, for example the computer was invented to crunch numbers and crack codes not to play games or use Facebook.

Children are then to start creating a blog using Edmodo from the information they have gathered.

More information about collaborative writing can be found here -
http://en.wikipedia.org/wiki/Collaborative_writing

| 3 | Identify some components of a computer | Children will learn about the inside of a computer, what it looks like and what key elements do. Show the two videos below, the first will introduce the children to the components of the computer and the second how it all works
1- https://www.youtube.com/watch?v=4eNTlwnnhss
2 - https://www.youtube.com/watch?v=AkFi90lZmXA

Next demonstrate the app, Thinglink to the class. If you have not used Thinglink before then this short tutorial may be useful:
http://www.youtube.com/watch?v=jA8TIVSSSWY

Ask children to work in groups to create their own Thinglink image to explain in their own words the key parts of a computer. They could add links to external videos, record audio or add additional images to annotate their image of a computer.

Once completed, the children can upload the file to their Edmodo profile. | Children gain an understanding of the main components of a computer.

Create a tour of the main computer components, using appropriate technology.

Children are able to upload their video to their Edmodo profile. |
| 4 | Introduce the link between hard and software inc programming. | Lead a class discussion about technology and communications today for example, how search engines work, how programmers need to write the software to make the hardware work, introduce what programming language is for and how data and databases work.

One example would be to explain that Facebook is a massive database which stores all of the user's information. This information can then be used to tailor what adverts appear on an individual's profile.

Show the children this video to show how search engines work:
http://www.bbc.co.uk/webwise/0/22562913

In groups, ask the children to research on the internet and find out how Google works. Ask the children to post their findings to their Edmodo profile. | Children are able to participate in a discussion about modern technology and communication.

Children understand how Google works and are able to post their findings to their blog.

What is Google?

What is a search engine? |

			How does a search engine work?
5	Future Technology/ trending technology.	Demonstrate to the children examples of newer technology: **Augmented reality:** http://www.howstuffworks.com/augmented-reality.htm http://en.wikipedia.org/wiki/Augmented_reality **3D printing:** http://mashable.com/2013/03/28/3d-printing-explained/ http://www.telegraph.co.uk/science/10158886/Scientists-print-3D-bionic-ear.html **Code clubs:** https://www.codeclub.org.uk **Make clubs:** http://www.youngmakers.org http://en.wikipedia.org/wiki/Maker_culture **Nano technology / medical technology:** http://science.howstuffworks.com/nanotechnology.htm http://en.wikipedia.org/wiki/Nanotechnology Ask children to research on the internet and find out more about new and trending technology. Ask the children to post their findings on their blog.	Children have a greater understanding of new technologies. Children are able to search online as well as able to post their findings to their blog. What do we mean by the term.....? What is.......used for? How can this technology help us?
6	Round up and presentations	In the first half of this session, ask the children to think about what they would most like to have invented and any changes they would make. Children to feedback their ideas to the class. Round up and evaluate work completed.	Children to reflect on what they have learned and present to the class.

Further challenges and possible home learning activities:

Discuss with the children what your school could use an online blog for and what would be the intended purpose of the blog? What other organisations use blogs?

Alternative Apps/Software to those recommended

Week 3:
Instead of using the Thinglink app – MS Word and ask children to find a picture of the inside of a computer and then annotate the various parts of it.

KS 2 – Y4 (Ref: 28)

Apptivity Name: Making Games

Summary

This lesson plan will take you through the necessary steps to create your very first computer game in Scratch. This game involves firstly creating your own sprites/graphics and background images. The child will create a game where the character chooses a random number between 1 to 100 and the player must then guess the number selected. Each guess will be tested to see if it is correct or if the player needs to go higher or lower with their next guess.

Key Computing Terminology:

Sprites: A sprite is a 2D image that is integrated into a computer game in a layered effect.

Animation: Animation is a way of creating a continuous motion and shape change of your graphic or sprite.

Artificial Intelligence: Artificial Intelligence (**AI**) is the behaviour of a computer independently of a human. Computer games have artificial intelligence built into them in order to make the game much more interesting.

Player Interaction: Player interaction is the main point of all the computer games. If the player cannot interact with the game or control something within a game they simply won't play the game.

Computing POS Reference:

- **CS 4** – Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.
- **CS 5** – Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.
- **IT 3** – Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.

What is required?

Weeks 1 - 6:
- Making Games – Lesson Guide - Ref 28.1
- Laptops with access to Scratch.
- Activities 1 – 6 – Ref 28 folder

eSafety
Not applicable

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Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Understand what a sprite is and create their own sprites in Scratch	**Scratch and Sprites** Open the resource "Making Games – Lesson Guide" (Ref 28.1). Explain the Scratch user interface to the children and how to create your own sprite in Scratch. As the children to complete **Activity 1** from the guide where they are asked to create their own sprite.	Children can explain what a sprite is. What is a sprite?
2	Create their own background image for the stage	**The Stage** Open the resource "Making Games – Lesson Guide" (Ref 28.1). Explain the Stage in Scratch and how to create your own background image for the stage. Ask the children to complete **Activity 2** from the guide where they are asked to create their image for the stage.	Children can explain what a stage is. What is the stage?
3	Understand what computer animation is and where it is used in games that they play. Can animate their own sprite.	**Animation** Open the resource "Making Games – Lesson Guide" (Ref 28.1). Explain the use of animation in computer games. Discuss and ask the children to identify different types of animation in popular computer games or computer games children play. Guide the children through **Activity 3** from the guide where they are asked to create a variable for the game.	Children can explain how variables are used in games. What is animation? What types of animation are used in the games that you play? What is a variable?
4	Understand Artificial Intelligence and why it is used in computer games. Identify artificial intelligence in computer games that they	**Artificial Intelligence** Open the resource "Making Games – Lesson Guide" (Ref 28.1). Explain the use of Artificial intelligence within computer games. Discuss and ask the children to identify the different types of artificial intelligence built into popular computer games or computer games that the children might play.	Children can explain what artificial intelligence is. What is artificial intelligence? Why do games use artificial intelligence? Where is artificial

	already play. Build artificial intelligence into their game. Understand why player interaction is important to a computer game. Identify player interaction in games that they play. Build player interaction into their game.	Guide the students through **Activity 4** from the guide where they build artificial intelligence into their computer game. **Player Interaction** Using the "Making Games – Lesson Guide" (Ref 28.1) explain Player Interaction within computer games. Discuss and ask the children to identify the different types of player interaction used in popular computer games or computer games that the children might play. Guide the children through **Activity 5** from the guide where they begin to build player interaction into their game.	intelligence used in the games that you play? Why is player interaction important in computer games? What interactions do you make with the computer games that you play?
5	Understand why scores and timers are important to computer games. Identify where scores and timers are used in games that they play. Build scores and timers into their game.	**Scores and Timer** Open the resource "Making Games – Lesson Guide" (Ref 28.1). Explain why scores and timers are used in games. Discuss and ask the children to identify where scores and timers are used in computer games that they are familiar with. Guide the children through **Activity 6** from the guide where they begin to build score systems and timers into their game.	Children can explain how to create a scoring system and timer into a game. Why are scores and timers important in a computer game? Do any of the computer games you play use scores and timers and how do they use them?
6	Identify how games can be improved. Make improvements to their game.	**Extras** Open the resource "Making Games – Lesson Guide" (Ref 28.1). Ask the children if they can identify how they could improve the game they have created. Guide them through the **Extras 1** and **Extras 2** activities to make improvements to the game that they have already created in previous sessions.	How can you improve a computer game?

Further challenges and possible home learning activities:

Ask the children to produce some marketing materials to advertise their game – this could either be a poster, a computer game box or a short TV advert.

Alternative Apps/Software to those recommended

Not applicable

KS 2 – Y4 (Ref: 29)

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We recommend
delivering this
project in 2 x ½ day
sessions.

Apptivity Name: Hurray for Hollywood

Summary

From this project, children will learn about the key factors in producing good footage. The children will devise their own characters, plot and storyboard before filming their short movie. The children will then import their film clips into iMovie where they will edit and enhance their footage before sharing their movie with the rest of the class.

Key Computing Terminology:

Flipcam: a HD camcorder

Storyboard: a sequence of drawings, representing the shots planned for a film.

Computing POS Reference:

- **DL3 -** Understand the opportunities [networks] offer for communication and collaboration
- **DL4 -** Be discerning in evaluating digital content
- **DL5 -** Use technology safely, respectfully and responsibly; recognize acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

What is required?

Week 1:
- Flipcam or iPad

Week 2:
- Teacher choice - Comic Life, Popplet, Pages or Publisher.

Week 3:
- Video camera, Flipcam or iPad camera.

Weeks 4-6:
- Teacher Reference - iMovie Tutorial Guide (Ref 29.1), Editing video with iMovie (Ref 29.2) or http://www.youtube.com/watch?v=8vbzDXk4vKk
- iMovie

eSafety
Not applicable

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Children are able to identify what makes good footage.	Show a sample of film clips and discuss how the clips were filmed e.g. discuss lighting, location, framing and shot sizes. Identify how formal programmes, such as the news differ from those designed to entertain, like a soap opera. Demonstrate how to use a camera to film a sequence using a flipcam or iPad. Ask the children to film a set of short clips – divide the class into pairs or small groups to gather some footage by filming short clips. Use a series of interview questions or ask them to describe their favourite holiday or event. Ask the children to evaluate their footage, identifying positive and negative aspects of the clips and identify how this can be rectified. Their analysis should consider lighting, sound quality, movement, location and the use of open and closed questions etc.	Children are able to record video footage. Children are able to evaluate the footage they have captured. How could you improve that clip? Why did you choose to record from that angle? What would you do differently next time?
2	Devise characters, plot and create a storyboard.	Ask the children to decide on a theme (fact or fiction) and the main characters for their movie. This could be a topic-based film to support an ongoing project, for instance a documentary charting the history of a special event (WWII), a TV advert for a product, a promotional video of school aimed at prospective families or each group could dramatise a chapter from a book they are currently reading. In pairs/small groups, ask them to create a storyboard to an agreed brief. A storyboard is a loose plan of what will happen, by whom and where. It should be a sequence of drawings along with some direction and dialogue/text. This can be amended as necessary but should be used to keep the film within the agreed parameters. This can be a paper-based activity or completed using an app/software such as Comic Life, Popplet, Pages or Publisher.	Children are able to plan their production. What happens in this scene? Who are the main characters? What is the story and is this reflected in your storyboard?
3	Children should use their storyboard to produce a script for the movie. Children to record their movie.	**Class Discussion** : Discuss the footage from week 1 and remind them of their critique of their footage. What where the positive and negative aspects of the footage. Explain that they will need to apply what they have learnt when making their films. Make children aware that when they are filming they should always consider the environment they are filming in before they start, for example, noisy roads, people and wind will all affect sound quality. Make sure the camera is positioned close to the action and is as free from unwanted noise as	Children can identify the most appropriate way to record their movie. Children can produce a movie script. How are you

| | | much as possible.

Recording the film – Ask the children to produce a script that follows the storyboard they produced in session 2 and then record their movie using either a video camera, flipcam or an iPad/Tablet device. | going to record your film?

What camera angles are you going to use? |
|---|---|---|---|
| 4 | Import and organise film clips. | Over the next few sessions, children will be using iMovie. If you have not used iMovie before, you may wish to refer to the iMovie Tutorial guide (Ref 29.1), Editing video with iMovie (Ref 29.2) or this online tutorial video - http://www.youtube.com/watch?v=8vbzDXk4vKk

The groups should import their previous footage into iMovie (create a new event) either by removing the memory card from the camera (often SD, XD etc) and placing it into a card reader port, or by attaching the camera cable to a laptop or computer or by releasing the USB on a flipcam and inserting into a USB port.

Individual clips can be selected or the 'select all' option can be used. Often it is easier to review the footage on a laptop rather than on the device.

Groups must organise their footage. Listen for sound quality; check lighting levels are correct, that framing conventions have been applied accurately and shot types are appropriate. Delete all unnecessary footage. The group should also add any additional information to their storyboard.

NB iMovie accepts file types: 3GP, MOV and MP4, M4V, H.264, AVCHD
*Use 'Any Video Converter', 'Handbrake' or other file conversion applications if necessary. | Children are able to import footage they have recorded into video editing software.

Children can review their footage and select relevant clips.

Why have you chosen that clip? |
| 5 | Edit and enhance footage onto a project timeline using iMovie. | Each group must now create a new project within iMovie and select an appropriate theme - iMovie will then automatically add transitions between clips when the children add their footage into the project. Any footage in the event library can then be added to the project timeline, in full or in part, as many times as necessary. Groups should refer to their storyboard to order their clips correctly.

Demonstrate to the children how to edit their footage. Each group must determine any enhancements they need to make to tidy up each clip e.g. remove any unwanted footage by splitting the clip and deleting any footage that is no longer required. | Children are able to timeline clips from the gallery.

Children are able to edit clips on the timeline.

How did you edit your footage?

Why have you put the clips in that order?

How did you split those clips?

Why did you choose that |

			theme?
6	Apply the finishing touches before sharing the movie.	Children must now add the finishing touches to their footage – sound effects, text, music and make any alterations to the audio. They should do the following: Text – This should be added at the start to introduce the movie and at the end to let the audience know who starred in the film. Children may also want to add text during the movie for example if they are producing a news report then they may want to add the news reporter's name. Music and Sound Effects – Ask the children to include introductory music to their film, they can then add some throughout the film if appropriate. Similarly if they need any sound effects adding they can do this. The final project should be exported as a movie. This will compress all the various elements into a file for viewing either on a mobile device or on a laptop. Host a show and tell giving each group an agreed time limit to introduce and show their movie. *NB movies can be uploaded onto a video sharing website (such as Vimeo), on to your school website and/or a showcase event for families could be hosted*	Children are able to add titles, music and sound effects What sound effects have you added? Why? Why have you chosen that particular piece of music? What would you do differently next time?

Further challenges and possible home learning activities:

Children to produce a poster to promote their film. Ask children to look at other movie advertisings, what are the common features of movie posters (title of movie, picture of the main character/ theme and then who starts in it & release date)

Alternative Apps/Software to those recommended

Weeks 4 - 6:
- Alternative to iMovie – Windows Movie Maker

KS 2 – Y4 (Ref: 30)

Apptivity Name: Interface Designer

Summary

HTML is the language used to create files which can be read by internet browsers to display web pages on the internet. In this lesson it will take you through the step to build a basic web page using tags and elements to change the design and the colour of the web page. The theme of the web page will be to review a film or a book that the children have read or watched.

Key Computing Terminology:

HTML: Web pages are files that are viewed using a internet browser. The pages are written in a language called HTML. HTML is made up of elements, or tags, that are used as instructions to tell the browser what should appear on a web page and how it should be structured. HTML stands for HyperText Markup Language.

Tags: Tags are what the HTML language uses as instructions to tell in the internet browser what should appear on the web page. Tags look like this *<head> </head>*. They will always have an opening tag and closing tag.

Structure: HTML files need to have a structure or order to them in order for them to be understood by the internet browser to display the web page. If the structure is wrong then the web page won't display correctly.

Elements: Elements are like tags but they contain the information about the web page. An element will sit inside a tag.

Computing POS Reference:

- **CS 4** – Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.
- **CS 5** – Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.
- **IT 3** – Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.

What is required?

Weeks 1 - 6:
- HTML Interface Design – Lesson Guide - Ref 30.1
- TextEdit on a Mac or Notepad on a PC
- Activities 1 – 6 – Ref 30 folder

eSafety
n/a

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Understand what HTML is and what it stands for. Able to create a HTML file. Understand how a HTML file must be structured.	Open the resource HTML Interface Design – Lesson Guide (Ref 30.1). Give an explanation of what HTML is and how to create a HTML file. Look at the structure of a HTML file and ask the children to complete **Activity 1** where they build the structure of their first HTML file.	Children understand how a HTML file must be structured. What is HTML? What does HTML stand for? What happens if HTML files are not structured correctly?
2	Give a HTML file a title. Understand the difference between the different heading elements and add a heading to their HTML page.	Open the resource HTML Interface Design – Lesson Guide (Ref 30.1). Explain how the title tag works within a HTML file and demonstrate how you add a title for the web page. Demonstrate the use of heading elements and the different heading elements available. Allow the children to experiment with the different heading elements. Ask the children to complete **Activity 2** where they give the web page a title (*My Film Review Web Page*) and add a heading to the page *(Harry Potter and The Deathly Hallows)* using a heading element.	Children are able to add a heading to their page. What is a HTML tag? What is a HTML element? What is the difference between the heading elements?
3	Change the background colour of a HTML web page and set font styles within it.	Open the resource HTML Interface Design – Lesson Guide (Ref 30.1). Explain how the background colour of pages is changed using the *background* element and then allow them to experiment with changing the background colour of their page using different *hexadecimal* codes. Show the examples of how text can be changed using the different text elements and ask them to then complete **Activity 3** where they will change the background colour of their page and set the font style for their web page.	Children are able to change the background of a web page and change font styles. What element would we use to change the background colour? What element would we use to change the font to bold?
4	Add an image to a web page. Add a paragraph	Open the resource HTML Interface Design – Lesson Guide (Ref 30.1). *Ask the children to search the internet to find a*	Children are able to search the internet. Children are able to

	of text to a web page.	suitable image to represent their film or book review. Demonstrate how you then add that image to your web page using the image element. Ask the children to then complete **Activity 4** where they add an image to the web page and then begin to write their review using the *paragraph* element.	add a photograph to their web page. What element would we use to add an image to the web page? What is the correct format for inserting an image?
5	Create a list of information on a HTML web page. Understand web links and how to embed them into a HTML web page.	Open the resource HTML Interface Design – Lesson Guide (Ref 30.1). *Show* examples or lists and how they are used in HTML web pages. Demonstrate how to create a list on their web page and allow them to experiment with creating lists. Discuss links in web pages, how they are used and what they are used for. Demonstrate how to create a link on a HTML web page and then ask the children to complete **Activity 5** where they add a list of characters from the film/book and a link to other web pages which relate to the review they are writing.	Children are able to add a list to their web page. Which element will create a list? What is the correct way to use the link element?
6	Create a table in a HTML web page. Present information inside a table in a HTML web page.	Open the resource HTML Interface Design – Lesson Guide (Ref 30.1). *Show* how information can be presented in tables and how they are created within HTML web pages. Allow the children time to experiment with tables and their structure. Guide them through **Activity 6** which asks them to embed a table into their review web page to present information. They will then be asked to fill the table with various different types of information based on their book or film review.	Children are able to create a table on their web page. How do you add a column to a table in a HTML page? How do you add a row in a HTML page? What information can we present in a table?

Further challenges and possible home learning activities:

Children could add a diary of what they did over a weekend or school holiday and include pictures/ links to relevant websites etc.

Alternative Apps/Software to those recommended

Not applicable

Knowsley
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KS 2 – Y4 (Ref: 401)

Apptivity Name: Heroes

Summary:

In this computing activity, children will blend creative writing and coding to produce their own interactive animations.

Key Computing Terminology:

Code These are the instructions used to write a computer program. Different pieces of code can be arranged in different ways to give the computer a set of instructions.

Debug This is the process of finding errors or problems with your code and trying to fix it. Sometimes code will be in the wrong order or there could be bits of code missing, the process of fixing the code is called debugging.

eBook An electronic version of a printed book which can be read on a computer or a specifically designed handheld device.

Computing POS Reference:

- **CS 4** – Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.
- **CS 5** – Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.
- **IT 3** – Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.

What is required?

Week 1:
- Disney/Pixar story spine (Ref 401.1)
- We are Game Makers Project Book (Ref 401.2).
- Scratch Jr Character and Setting Sheet (Ref 401.3)
- Pencil/Paper

Week 2:
- We are Game Makers Project Book (Ref 401.2).
- Scratch Junior

Week 3:
- We are Game Makers Project Book (Ref 401.2).
- Scratch Junior
- Access to (if completing Extension activities): https://www.scratchjr.org/teach.html

Week 4:
- We are Game Makers Project Book (Ref 401.2).
- Scratch Junior
- Access to (if completing Extension activities): https://www.scratchjr.org/teach.html

Week 5:
- We are Game Makers Project Book (Ref 401.2).
- Scratch Junior
- Access to (if completing Extension activities): https://www.scratchjr.org/teach.html

Week 6:
- iPads with Book Creator
- **Useful links:**
  - https://www.youtube.com/watch?v=znrlTHDzr6s

eSafety
- Digital Citizenship and Technology 2.1 & 2.3

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Create an original hand written story using the Disney/Pixar story spine.	**Digital Storytelling** 1. Explain to the children that they are going to write a story using the Disney/Pixar story spine (Print out a copy of the worksheet or use the QR code and ask the children to complete it electronically - Ref 401.1). Print out We are Game Makers Project book (Ref 401.2). 2. The children will have 30 mins to write their own adventure story. They can choose characters and settings from the Scratch Jr Character and Setting Sheet (Ref 401.3) or come up with their own. They will have to draw them later to be included in their final coding activity. 3. When the children have finished ask them to swap stories with each other and provide feedback. 4. If you have additional time, the children could illustrate their stories.	Children produce a story and can follow a story spine. Why have you chose those characters? What is your story about?
2	Coding Understand the Scratch Jr coding environment and what the different coloured coding blocks do.	**Play and Explore** 1. In pairs, ask the children to complete tasks 1-3 in the We are Game Makers Project book (Ref 401.2).	Children are able to sequence code to perform an action. Children can identify different coding blocks. Why does that character.....? What would happen if you changed the order of the coding blocks?
3	Coding Understand algorithms and code instructions. Create and debug Scratch Jr game.	**Challenges and making a game!** 1. In pairs, ask the children to complete tasks 4-6 in the We are Game Makers Project book (Ref 401.2). **Extension activities:** Additional Scratch Jr games and resources to extend understanding can be found here: https://www.scratchjr.org/teach.html	Children can create a game using coding blocks in Scratch Jr. Why does that character....? What would happen if you changed the order of the code?

			What would happen if you changed that coding block for this one?
4	Coding Use knowledge of Scratch Jr from previous lessons to make a coded interactive animation.	**Independent coding challenge** In this session, children will turn their stories from week 1 into a coded animation. Ask children to complete Task 7 in the We are Game Makers Project book (Ref 401.2). **Extension activities:** Additional Scratch Jr games and resources to extend understanding can be found here: https://www.scratchjr.org/teach.html	Children can code an interactive animation. What does that block do? What would happen if you swapped those two blocks round? What would happen if you changed that number?
5	Coding	Independent coding challenge continued. If children finish early then they can either choose to help others or begin the next activity and document their Scratch Jr understanding.	As above.
6	Storytelling	**Reflection and storytelling:** Using Book Creator ask the children to write a learning journey based on what they have done and learnt including lots of photos and recordings. Ask the children to reflect on their learning successes. This video may be useful if you need to demonstrate the use of Book Creator: https://www.youtube.com/watch?v=znrlTHDzr6s	Children reflect on their learning. Why is sequencing important? Why do we need to learn to code? Can you explain what that line of code do?

Further challenges and possible home learning activities:
N/A

Alternative Apps/Software to those recommended

Week 6: PowerPoint or any similar software/app that allows the children to write their learning journey.

KS 2 – Y4 (Ref: 402)

Apptivity Name: We've Got The Power:

Summary:

In this computing activity we will be exploring the power of social media as a force for good. We will ask children to start a campaign to correct one of the many wrongs in our world and use social media to gain support and gather momentum for their cause.

Key Computing Terminology:

Storyboard A sequence of drawings, representing the shots planned for a film.

Computing POS Reference:

- **IT 3 –** Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.
- **DL**5 - Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

What is required?

Week 1:
- Access to the following sites:
  https://www.youtube.com/watch?v=BmOlzRQTabA
  http://www.nhs.uk/change4life/pages/get-going-every-day.aspx
  http://www.nhs.uk/Livewell/fitness/Pages/physical-activity-guidelines-for-young-people.aspx
  http://www.nhs.uk/Change4Life/Pages/be-more-active.aspx

  https://www.nhs.uk/10-minute-shake-up/shake-up-zone
- Account with https://www.gonoodle.com

Week 2:
- Access to:
  https://en.wikipedia.org/wiki/Storyboard#/media/File:Storyboard_template_example.svg
  http://www.independentmusicadvice.com/2011/07/how-to-create-a-storyboard-for-music-videos-with-template/
  http://www.independentmusicadvice.com/2011/07/how-to-make-a-music-video-part-1/
- Account with https://www.gonoodle.com
- iPads with Showbie or Seesaw (or similar)

Week 3:
- iPad or video camera
- Making a music video presentation Ref 402.1

Week 4:
- iPads with iMovie
- Access to:
  https://www.youtube.com/watch?v=SFaUqwKAr2g

Week 5:
- Pic Collage
- iPad app - QRafter Pro - QR reader and maker or http://www.qrstuff.com)

Week 6:
- Pic Collage
- iPad app - QRafter Pro - QR reader and maker or http://www.qrstuff.com)
- Access to:
Be Share Aware -
https://www.nspcc.org.uk/preventing-abuse/keeping-children-safe/share-aware

eSafety
3.2 Communicating On-line and images, Social Networking,

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	eSafety / Digital Citizenship	*NB. You will require parental consent as children will be using social media in later activities.* **We need to make a change…** Spark class discussion about childhood obesity by watching this video. How can we make a change? 1. Show your class this video: 5 Extra Years - https://www.youtube.com/watch?v=BmOlzRQTabA 2. Make sure the class understand the video message - Today's children are the first generation with a shorter life expectancy than their parents. 3. Now ask; "how can we make a change?", "How can we raise awareness of this?", "how can we get the school moving (exercising)?". 4. Tell you class you have an idea too. Watch GoNoodle videos (you'll need to sign up first- https://www.gonoodle.com) 5. Explain that their task is to make their own "Get Active" video for other classes. Brainstorm ideas about what the video could be about and write them down as a class. Key facts about exercise: • Adults needs to be active for at least 150 minutes each week • Children aged five to 16 need to be active for at least 60 minutes each day • Children under five need three hours of activity a day. Find out more on NHS Choices http://www.nhs.uk/change4life/pages/get-going-every-day.aspx As an extension to this the children could write a simple questionnaire and gather data from other classes about how active they are. **Other resources:** NHS Guide to Fitness http://www.nhs.uk/Livewell/fitness/Pages/physical-activity-guidelines-for-young-people.aspx Change 4 Life http://www.nhs.uk/Change4Life/Pages/be-more-active.aspx 10 Minute Shake Up https://www.nhs.uk/10-minute-shake-up/shake-up-	Children are able to understand how video can be used to help solve a relevant global issue. Why do you think video is a good way of sharing a message? Why do you think video is a good method to help solve a problem?

		zone	
2	Websites/ Blogs	**Planning your video…** Storyboard and plan 2 minute workout/exercise/music video. 1. Refresh the children' memory of GoNoodle videos 2. Split the class into groups of four. 3. Explain what a storyboard is and how to use it. 4. Ask the children to plan their music video using the storyboard. **Key elements to include:** - Does your video have a story? - Location, where will it be filmed? - Feel and pace of the video, bright, happy, slow, calm or fast and energetic? - What music will you use? Children may if they wish write and record their own songs about being healthy and getting more exercise. 5. Get the children to photograph their storyboard and share with the class for feedback. You could use apps such as Seesaw and Showbie etc. Or alternatively simply show on the interactive board. **Other resources:** **Making a music video presentation** Storyboard template https://en.wikipedia.org/wiki/Storyboard#/media/File:Storyboard_template_example.svg Storyboard for music videos http://www.independentmusicadvice.com/2011/07/how-to-create-a-storyboard-for-music-videos-with-template/ Making a music video http://www.independentmusicadvice.com/2011/07/how-to-make-a-music-video-part-1/	Children can storyboard and plan an idea.
3	Multimedia Presentation	**NB. If the children require props etc make sure they have them before filming and they plan how they will be used.** **Filming our video…** Aim: To complete filming of video clips. **Lesson:** 1. Show the children Making a music video presentation Ref 402.1). Get the children into their groups and assign them an iPad or video camera. 2. Set them the task of reviewing their storyboard and to begin filming. Remind them that they have a deadline and filming must be completed during this session.	Children can produce a themed video. Why have you chosen this idea? Why are you filming from this angle?

		3. You may also need to give the children access to their required music. 4. The clips must be saved to their online folders if you are using a shared device, this will avoid the clips being deleted or lost.	
4	Multimedia Presentation	**Editing our video…** Aim: To complete editing of music video and publish. 1. Get the children into their groups, assign them an iPad or laptop. 2. Now the children must edit add text and music to their video before saving and sharing it. **Other resources:** Using iMovie on an iPad https://www.youtube.com/watch?v=SFaUqwKAr2g	Children are able to edit and publish their music videos. How did you clip that scene? Why have you chosen that music for this film?
5	Multimedia Presentation	*Some children/groups may need additional time to complete their music video from the previous session.* 1. Get the children into their groups and assign them an iPad or laptop each. 2. Using Pic Collage, ask the children to make a poster to advertise their video. **These must include:** • QR code link to movie • Some key facts about healthy lifestyles	Children are able to produce promotional materials for their videos? Why have you chosen that Font/ Background/ Picture?
6	Websites/ Blogs	**Finish off and advertise…** Give the children time to finish their videos/posters Ask children to present their videos either in class or to other classes. If the class has a school Twitter or Facebook etc then the children could use social media to raise awareness and share the class video with parents. **Other resources:** Be Share Aware https://www.nspcc.org.uk/preventing-abuse/keeping-children-safe/share-aware/	Children are able to promote their videos. Why do you think you would use social media to promote your video? What other ways could you choose to promote your video?

Further challenges and possible home learning activities:

Children can produce a follow up video that encourages children to become more active, or an investigate video exploring the causes behind the 'obesity crisis'.

Alternative Apps/Software to those recommended

Week 4: iMovie on Mac or Windows Movie Maker

Additional Resources if using alternative software:

iMovie on Mac

https://filemanager-abcopen.s3.amazonaws.com/pdf/ABCOpenTipsheet_iMovie.pdf

Using Windows Movie Maker

https://www.youtube.com/watch?v=JNKRCaiox4E

YEAR 5

Curriculum Links – YEAR 5:

Activity	Eng	Maths	Sci	PE	Art & Design	D&T	Geog	His	Music	PSHE	RE	MFL
Cars												
Website Designers	X									X		
News Room	X									X		
Interactive Art Exhibition	X				X			X		X		
Code Breakers		X										
Let's change the world: Inventors	X				X							
Grand Designs					X		X	X				
Earth and Space			X									

KS 2 – Y5 (Ref: 31)

Apptivity Name: Cars

Summary:

This lesson plan will take you through the necessary steps to create a detailed 2 player game that includes racing cars around a track. Depending on the amount of time that you have to work on this project you can get the children to design their own cars or use the graphics supplied with the lesson guide. The first to three laps wins the race.

Key Computing Terminology:

Sprites: A sprite is a 2D image that is integrated into a computer game in a layered effect.

Sensors: Sensors are a way of detecting if sprites have collided or touched certain parts of the screen. A sensor can detect if a sprite is touching a certain colour on the stage for example.

Variables: Variables are used to store information within computer code, each Variable will have a unique name and it will hold a known or unknown quantity or value. For example the number of points scored by each player would be stored in a variable.

Conditional Statements: Can also be described as a *Conditional Expression,* they are features of coding that perform different computations or actions depending on a specified condition being either *True* or *False.* For example using the ***if then else*** construct, **If** t*he following Condition* is *True* **Then** do t*he following instructions* **Else** *do these different instructions*.

Looping: A loop is a sequence of instructions that will be continually repeated until a ***Conditional Statement*** is reached or becomes true. Using loops is a way of asking a question until something (conditional *statement*) becomes true.

Computing POS Reference:

- **CS 4** – Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.
- **CS 5** – Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.
- **IT3 -** Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information

What is required?

Weeks 1 - 6
- Racing Cars – Lesson Guide - Ref 31.1
- Laptops/Macs with Scratch
- Activities 1 – 11 – Ref 31 folder

eSafety
Not applicable

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Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Understand how to create multiple sprites for their project and how to resize them.	Open the resource "Racing Cars – Lesson Guide" (Ref 31.1). Explain the Scratch user interface and how to create your own sprite in Scratch. Ask the children to complete **Activity 1** from the guide where they are asked to create their own sprite.	Children are able to create a sprite. What is a sprite? How do we shrink our sprites if they are too big?
2	Understand how to make sprites move and how to control them through keyboard input. Understand how sensors work to detect sprites position.	Open the resource "Racing Cars – Lesson Guide" (Ref 31.1). Explain how to change the background image of the stage. Ask the children to complete **Activity 2** from the guide. Next, explain the code block to make the cars move around the track. Ask the children to complete **Activity 3 & Activity 4** from the guide.	Children are able to explain how to change the background image. Children understand what the code block is. What is the stage? Why do we want to check if the car is touching the colour green? Why do we want to check if the car is touching the colour grey?
3	Understand variables and how to create multiple variables for sprites.	Open the resource "Racing Cars – Lesson Guide" (Ref 31.1). Explain how to create variables for different sprites. Ask the children to complete **Activity 5 & Activity 6** from the guide.	Children are able to create variables. Why do we have a variable for the red car and a variable for the yellow car?
4	Use conditional statements to decide the winner of the game. Build player interaction into their game.	Open the resource "Racing Cars – Lesson Guide" (Ref 31.1). Explain the code block on how to use conditional statements to confirm the winner of the game. Ask the children to complete **Activity 7 & Activity 8** from the guide.	Children are able to use and explain what conditional statements are. Why are we asking **if** red = 3? Why are we checking if the car sprite has touched the colour yellow?
5	Understand and use a variables	Open the resource "Racing Cars – Lesson Guide" (Ref 31.1).	Children are able to create a timer for their game.

	and a conditional statement to create a counting timer.	Explain the code block on how to use conditional statements to create a timer for the game. Ask the children to complete **Activity 9** from the guide.	Why do we check if **red = 3 OR yellow = 3**?
6	Understand how random numbers can be used to affect a sprites behaviour. Understand how sensors can change a sprites position.	Open the resource "Racing Cars – Lesson Guide" (Ref 31.1). Explain the code block on how to build extra features such as speed up and slow down into the game. Ask the children to complete **Activity 10 & Activity 11** from the guide.	Children are able to add additional features into their game. Why do we change the direction the sprite is pointing when it touches the speed up or slow down sprites?

Further challenges and possible home learning activities:

Ask the children to produce a set of instructions for playing their racing game and a set of rules to follow when playing it.

Alternative Apps/Software to those recommended

Not applicable

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KS 2 – Y5 (Ref: 32)

Apptivity Name: Website Designers

Summary:

This project will provide you with a six week lesson plan to guide children in creating their own website using free templates from WordPress. The project culminates in the children presenting their website to the rest of the class and providing a rational behind choosing the content that they have used.

Key Computing Terminology:

Not applicable

Computing POS Reference:

- **CS7 -** Understand computer networks including the internet; how they can provide multiple services, such as the World Wide Web
- **IT3 -** Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information

What is required?

Week 3
- Site map example - Ref 32.1
- Teacher Reference - *http://learn.wordpress.com/*

Weeks 3-5:
- Internet access
- Website: http://wordpress.com/

eSafety
- Digital Citizenship & Technology 3.1, 3.2 & 3.6

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Plan content and theme for their website.	Discuss what content is and what content would be appropriate for different kinds of websites (show examples). For example look at the differences between: Your school website compared to the BBC website – what are the target audiences? Although they display different information (local vs international) both aimed primarily at adults so is the layout etc. significantly different? Next compare your schools website to that of Moshi Monsters or Club Penguin. The target audiences are significantly different and the sites reflect this – compare the fonts used, graphics, colours etc. Working in small groups, children must decide on a theme for their own website. This could be their class topic for the term or the one they have just completed. Alternatively, they may want to create a website that is aimed at an interest they have. Children should then consider who their website is aimed at – if they're doing their school topic they could aim this at other children who would be studying this topic. Children make a list of content that they want to include in their site.	Identify what types of digital content can be used in websites. Children decide on a theme for their website. What is a website? Why do we use websites? What are the differences between these sites? Why do you think there are differences in the appearance of these two sites? Why do you think this site has used this Font style?
2	Creating and source content.	Look at 'content' in more detail. Making your own content: show examples of content and the applications/software that created them. Sharing others content: identify what Copyright protection is and what it is designed to do, use Google images as an example. Show methods of sharing other people's content e.g. creating links, embed code,	Be able to identify which software can produce which type of content. Identify which websites they can safely share content from. Define what copy right protection is. What do we mean by

		RSS feeds, podcasting and film/animation. Children investigate what content would be appropriate for their site.	content? What is copyright? Why do you think we have copyright laws?
3	Build website part one	*Teacher reference – this is a step by step guide on how to sign up to and use* <u>http://learn.wordpress.com/</u> Groups must sign up to WordPress, (using school not personal email address) Show class what a site map is and how it helps in planning – example site map available (ref 32.1). Plan what pages and content they want on their site on paper (create a site map). Start collating the resources they want to use and type up any text in a Word document and create any other content.	Create and sign up for a free website. Create a site map for their site. Plan content for each page. What is a site map? Why do you think a site map can help when producing a website?
4	Build website part two	Show children how to use WordPress and how to copy and paste, edit and format text, how to add pictures and embed content. Children finish adding content to their site.	Finish designing their website. Which media types are you using on your website? Why have you included that particular picture/ movie? Where have you got your information from?
5	Test and make amendments to site	Groups can work together to finish their website. Testing links and checking that all content is correct. Groups will then swop with each other to test each other's sites. Feedback recorded on paper. Using a small questionnaire e.g. on a scale of 1-5 how easy/hard is it to navigate the site and how would you improve upon the site.	Ensure all links work. Ensure all content is correct. Ensure all spelling and grammar is corrected. Ask others to test their site. Is your site free from any copyright images? How does it differ from your original site map

			plan?
6	Group presentations	Each group has 5 minutes to present their website, highlighting: a. Why they chose their content? b. What did they make themselves and what did they source from the internet? c. How does their site suit their target audience? d. If they designed their site again, what would they do differently?	Groups present their website and rational behind their decision making.

Further challenges and possible home learning activities:

Children to critique their favourite site, produce a site map and consider which types of media they have used? What about the appearance of the site? Who is it aimed at? What is unique about this site? What could be done to improve the site?

Alternative Apps/Software to those recommended

Not applicable

KS 2 – Y5 (Ref: 33)

Apptivity Name: Newsroom

Summary:

This project will provide you with a six week lesson plan to guide children in creating their own news report. The children will firstly learn about how news is delivered and the differences between local and national news reports. The project culminates in the children recording their own news report.

Key Computing Terminology:

Green screen: (in film and video) a subject is filmed in front of a green background which allows a separately filmed background/image to be added to the final video in the editing phase.

Computing POS Reference:

- **DL3 -** Understand the opportunities [networks] offer for communication and collaboration
- **DL5 -** Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact
- **IT2 -** Use search technologies effectively
- **IT3 -** Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information

What is required?

Week 1:
- Examples of local and national newspapers (not provided)
- iPads – Popplet app

Week 2:
- Internet access
- Laptops or tablets for internet research
- *Reference link about 5WH:*
    - *http://moodle.unitec.ac.nz/mod/page/view.php?id=11413*

Week 3:
- Laptops/Tablets to write up their script/interview.

Week 4:
- Laptops or Macs

Week 5:
- Flip cam/Tripod or I Can Animate software
- Green Screen if using.

Week 6:
- iMovie
- Laptop to present news reports.

eSafety
Not applicable

Knowsley
City Learning Centres

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Children gain an understanding of how news is communicated.	Explain to the children how news is delivered via traditional and new media outlets. Look at examples of local (e.g. Merseymart) and national publications and discuss how they differ. In groups, ask the children to create a mind map using Popplet to show different media outlets they use. Ask each group to feedback to the class.	Children understand how news is delivered and the difference between local and national news. Children can create a mind map. What is the difference between local and national news?
2	Focus on local news issues.	Discuss ideas about what would constitute a local news story and what the current issues in their local area are. Alternatively, you could discuss news based around a current school topic. As a class, the children must decide on stories to investigate. Split the children into groups of 4 and ask them to research their story on-line. Children must find out the 5 'WH' questions (who, what, where, why and how) of their story. *Reference link about 5WH:* *http://moodle.unitec.ac.nz/mod/page/view.php?id=11413*	Children are able to identify news items. Children are able to use the internet to research. What are you reporting on? Where have you found your information? Have you looked at the story from both sides?
3	Plan how groups will report their story.	Using research collected last session, the groups must now plan how they are going to report their story. Give the children in each group one of the following roles: • **News reporter:** they need to write a script for their news report and type it up. • **Interviewer:** must contact and arrange an interview with a relevant person and decide on the questions they would like to ask. • **Producer:** plan and story board their news item and decide if they need props etc. • **Camera operator / Technician:** they will be in charge of all technical aspects of production e.g. laptop, cameras, operation of software and saving work (with teacher supervision) Ask the children to script their reports and the	Children are able to plan and fulfil their role. What is your role in the group and what are you responsible for? What is the difference between reporting and interviewing? What does the producer do? Why do you need a script? Why must you make sure you thoroughly

		setting for the different stages of the report – For example, Start in the studio – out to location – interview at another location – back to studio get pictures for the backdrop of each of these scenes. Are children able to do any mock interviews were the children could pretend to be one of the characters in the story?	investigate the story?
4	Plan how groups will report their story.	Continue with work on the script and settings. Rehearse reports.	
5	Film their news report.	Groups record the rest of their report using a flip cam and tripod. The children could use Green screen functionality so they can later edit their footage to add their own news studio background in iMovie.	Children are able to record their news report. What do we mean by 'editing' your footage? How are you applying a different background? What is green screening?
6	Children feedback and reflect on their reporting and producing skills.	Children to edit their movie using iMovie, add introductions, music and any text they would like to add and then export their report. Groups present the news footage they have created. They must reflect on the process and how they might do it differently next time.	Children show and tell. What would you do differently next time? How did you edit your footage? Why did you use that clip? Could you have interviewed anybody else in the story?

Further challenges and possible home learning activities:

Children to produce a newspaper report using the information gathered on the story but to approach it from a different angle than the original report – to show two sides to every story.

Alternative Apps/Software to those recommended

Week 1:
- Alternative to Popplet – Flowol or Microsoft PowerPoint / Word

Week 6:
- Alternative to iMovie – Microsoft Movie Maker

KS 2 – Y5 (Ref: 34)

Apptivity Name: Interactive Art Exhibition

Summary:
The aim of this apptivity is to introduce the amazing world of Augmented Reality (AR) to children. AR is a technology that superimposes a computer-generated image or video on a user's view of the real world.

This apptivity will incorporate the basic use of QR codes and then use more complex AR apps like Aurasma. This year, an estimated £410m will be invested into developing augmented reality applications.

The children will also learn to find images using the web and refine their research skills as they explore various works of art. In the fourth and fifth lessons, children will be introduced to filming and editing as they make short videos based on their research findings, these video will then be linked via AR to printed copies of their artwork to bring them to life and tell a story. Watch this video, as this was the inspiration for the activity and it will help you grasp what AR is: http://vimeo.com/50747223

Key Computing Terminology:
QR Code: a machine-readable code consisting of an array of black and white squares, typically used for storing URLs or other information for reading by the camera on a smartphone.

Augmented Reality: a technology that superimposes a computer-generated image on a user's view of the real world, thus providing a composite view.

Green screen: (in film and video) a subject is filmed in front of a green background which allows a separately filmed background/image to be added to the final video in the editing phase.

Computing POS Reference:

- **DL5 -** Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact
- **IT2 -** Use search technologies effectively
- **IT3 -** Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information

What is required?
Week 1:
- Introduction presentation – ref 34.1

Week 3:
- *Teacher Reference –* http://www.whatisaqrcode.co.uk
- Mona Lisa - QR code.pdf – ref 32.2
- Scanning your First QR Code video – ref 34.3
- Making QR Code video – ref 34.4
- iPad/Tablet/Phone
- iPad app - QRafter Pro - QR reader and maker or http://www.qrstuff.com)
- Word processing software and access to a printer.

Weeks 4 - 5:
- Fancy dress (optional)
- Shooting & editing video – ref 34.5
- Green screen (optional)
- Video camera or iPad/tablet video application

Week 6:
- *Teacher Reference –* http://www.aurasma.com/#/whats-your-aura
- Aurasma account
- App - Aurasma
- iPad/Tablet/Phone
- Teaching with Aurasma video – ref 34.6

eSafety
- Digital Citizenship & Technology 3.2 & 3.6

Knowsley City Learning Centres

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Understand that the term "Augmented Reality" (AR) means to layer the real world with digital content.	We are going to look at famous works of art and the artists that created them. Open the introduction presentation (ref 34.1) and run through it. See if children can guess or name the artists and artwork. Then ask "wouldn't it be good if paintings could talk to us?" At this point show the AR and Art Video of Robert Burns. To do this, open the Aurasma app on an iPad/tablet and place the iPad/tablet over the image (within ref 34.1). Explain what AR is, this can also be found in the presentation. Tell the children that during the next lesson, they will be asked to tell the story behind famous art and bring them to life using Augmented Reality (AR). Assign children a piece of art and artist for session 2.	Can you think of other ways AR could be used in the real world?
2	Use word processing apps to gather research from the internet and save images. Use a paint app to express different artist styles of self portrait.	Set the children the task of internet research, they will need to write a short story/script all about their piece of art. This will provide the basis of the filming in session 4 & 5. Ask the children to include these elements in their scripts/stories: Name of artist, place of birth, style of painting, what the painting is about and who is in it. The children might also wish to include images from the web. Ask the children to record what sites they have visited so they can be used in session 3. **Extension:** Children can use a drawing app or application to produce a self portrait in the style of their given artist.	What websites did you visit to research about your artist? What drawing app did you use?
3	Understand that QR are triggers that QR reader use to find content.	Ask the children to make QR research sheets (can be produced using standard word processing software and then printed off). This is a document that includes a number of QR codes which when scanned will take the reader to one of the websites the child used to research their artwork. See the example resource, Mona Lisa - QR Code (Ref 34.2). Demonstrate how QR codes work: QR codes are like bar codes, children can scan them	How are QR codes used in the real world, can you give an examples? Can you explain how QR Codes work?

		with smart devices, and then content (video, audio, websites etc) will be delivered straight to them. Here is a more detailed explanation: http://www.whatisaqrcode.co.uk Watch Scanning your First QR Code video (Ref 34.3). Making a QR code: QR codes can do all sorts of things and are extremely easy to make, either on a tablet, phone (QRafter Pro - QR reader and maker) or via a website (e.g. http://www.qrstuff.com) If you are using iPads, please watch the video - Making QR Codes (Ref 34.4).	
4	Understand the fundamentals of basic filming, video editing and saving video	Dress up day and filming day: *Dressing up is optional but this can help capture the essence of the period and produces a better video.* View resource presentation, shooting and editing video (Ref 34.5). Ask the children to produce an exciting and interesting video that tells the story of their artwork. Children should work in pairs to help with filming and ask them to rehearse their script before filming. Demonstrate how to use a video camera or iPad/tablet video application to the children. You will also need to demonstrate editing and saving their video to the relevant place. Option: Using green screen can give an extra dimension to the children's video.	What difficulties did you encounter? How would you address these next time? Are there any improvements you could make?
5		Continue Filming/Editing: Continue and review children's work.	
6	Understand the basic ideas behind AR and how video can be overlaid on top of the real world.	Demonstrate how to add AR and talk about the Exhibition 1. You will need to register a class account with Aurasma on the iPad/Tablet/Phone. All iPads/Tablets or phones that will be used must be logged into that account. 2. Print out pictures of all the artworks used, these will be the exhibition pictures and used as triggers for the children's videos to play. 3. Model how to use the Aurasma app. See Teaching with Aurasma video (Ref 34.6).	How could this technology be used around the school?

		More demos can be found here: http://www.aurasma.com/#/whats-your-aura 4. Once you have shown the children how to use the app, they will need to add their videos to the app and apply the relevant trigger image. 5. Set up the exhibition by placing the artwork pictures around the room. The children can then hold the iPad/Tablet over the picture to play the videos. You could then invite parents in to see the interactive art exhibition.	

Further challenges and possible home learning activities:

Children to find other QR Codes and explain how they are used.

Alternative Apps/Software to those recommended

Not applicable

KS 2 – Y5 (Ref: 35)

Apptivity Name: Code Breakers

Summary:

A computer uses binary codes to function, it is the fundamental language of a computer. This apptivity has been developed to introduce children to this concept and how codes can be deciphered. The last activity of this apptivity involves a 'treasure hunt' type apptivity where the children will be asked to go round school finding codes they need to decipher.

Key Computing Terminology:

Decipher: convert (a text written in code, or a coded signal) into normal language

Binary Code: a computer language to express the digital information they process. It is called binary because it consists of two symbols – 0s and 1s.

Central Processing Unit (CPU): This is the part of the computer that turns your commands in actions

Computing POS Reference:

- **DL5 -** Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact
- **IT2 -** Use search technologies effectively
- **IT3 -** Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information

What is required?

Weeks 1 - 6:
- Code Breakers - ref 35.1

Weeks 2 – 3
- Code Breakers Worksheet - ref 35.2

eSafety
Not applicable

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Introduce children to codes and deciphering.	Open the resource 'Code Breakers' (ref 35.1) and guide the children through the presentation	Children are aware of what codes are used for and understand the concept of deciphering code
2	Children are able to explain what binary code is and what it is used for.	Continue from last session.	Children are aware of binary code and can translate binary codes. Which part of a computer is its brain? What is binary code? How do you translate binary code?
3	Children are able to explain what binary code is and what it is used for	Continue from last session.	Children are aware of binary code and can translate binary codes. What is binary code? How do you translate binary code?
4	Children can identify what a QR code is and for what it is used.	Open the resource 'Code Breakers' (ref 35.2) and guide the children through the activity.	Children are able to explain what QR codes are and use them. What does QR stand for? What is a QR code? Why we you use a QR code?
5	Children are able to create their own QR codes	Continue from previous lesson	Children are able to explain what QR codes are and use them. What does decipher code mean? What does 'QR' stand for?
6	Children are able to decipher codes.	Continue from previous lesson	Children are able to explain what QR codes are and use them. Children can translate binary code. What does decipher code mean? How did you decipher that code? What is binary code?

Further challenges and possible home learning activities:

Enrol your children in the Alan Turing Cryptography Competition (or if you've missed the entry date ask the children to complete the tasks without entering the competition):

http://www.maths.manchester.ac.uk/cryptography_competition/index.php

Use this site to find out who Alan Turing was.

Alternative Apps/Software to those recommended

For weeks 4-6 if children don't have access to a tablet device with a QR code reader on it please see Code Breakers Worksheet (ref 35.3).

KS 2 – Y5 (Ref: 36)

Apptivity Name: Let's change the World – Inventors

We recommend delivering this project in 2 x ½ day sessions.

Summary:

This project will take you through the steps to guide children in creating their own animation. The children will firstly be introduced to the concept of creating basic animations by using still images to create a moving scene. Next, the children will film their own animated sequence using props and sets that they have created and will also learn how to edit their final piece in iMovie.

Key Computing Terminology:

Green screen: (in film and video) a subject is filmed in front of a green background which allows a separately filmed background/image to be added to the final video in the editing phase.

Sequencing: A set of actions or events that must be carried out in the same order every time.

Storyboard: a sequence of drawings, representing the shots planned for a film.

Computing POS Reference:

- **IT3 -** Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information

What is required?

Week 1:
- Access to the internet to show:
  Sky Flipbook example -
  http://www.youtube.com/watch?v=VWfA_NKsqsU
- Stickman instruction sheet – Ref 36.1
- Flipcam

Week 2:
- Stickman instruction sheet – Ref 36.1
- iPads – I can Animate App

Week 3:
- iPads – iMovie App

Weeks 4&5:
- Props for props/set creation (not provided)

Week 6:
- iPads – I Can Animate and iMovie App

eSafety
Not applicable

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Introduce the concept that still images create a moving scene when played rapidly in a sequence.	Tell the children about early animation including the zoetrope. Demonstrate to the class the concept of flipbooks using examples from the internet such as this example from Sky Sports Flipbook 2013 - http://www.youtube.com/watch?v=VWfA_NKsqsU Flipbooks are a great way to introduce children to the idea that animation is created by producing a series of still images (hand-drawn, photos of objects, plastercine models), which are then quickly played in one sequence. Using Resource ref 36.1, ask the children to create their own stickman flipbook. Extension activity: in pairs, they can film their partner (using a flipcam) flicking through the flipbook similar to the Sky Sports example above.	Children are able to create a flipbook using a template. Children are able to film using a flipcam. Children are able to create their own images to use as part of their flipbook.
2	Film an animated sequence	Explain to the children that they are going to make their first animated cartoon. To do this give the children the stickman resource (Ref 36.1) and using the iPad app 'I Can Animate' ask the children to take two shots of each frame (i.e. position the image and take two shots/pictures of it, then reposition the image in the next position and take two shots/pictures and so on.) Make sure the children photograph the flipbook images in sequence. Play images as a motion clip - once all frames are photographed, the play button will rapidly run through these images in order and will give the appearance that the stickman is taking off his hat and a balloon will inflate and then burst. Save and export animation - it is important to explain that when filming the animation in I Can Animate, the project can be saved and edited as necessary. The project must be exported as a movie to be viewed as a video on a laptop and to be able to import into iMovie as part of the next session. Discuss naming conventions and file types as well as filing hierarchy using folders and sub-folders.	Children are able to produce their own short animation. How have you created that? How does stop frame animation work?
3	Export animation into iMovie and add backing music	Ask the children to import their animation from the previous session into iMovie - once the animation is saved as a movie file it can be imported into iMovie so the children can insert vocals, music, sound effects and titles (all the finishing touches).	Children can add music and sound effects to compliment their movies.

		Class Discussion: What is the benefit of music? Answers could include adding drama and atmosphere to a situation, providing a background for a montage or supporting the opening and closing credits. In addition, titles can be added to introduce interviewees or to display additional information that may not be covered by the clip for example help-line info. Ask the children to add backing music, opening titles and closing credits to their movie. All projects, whether it is a TV ad, a documentary or a factual based drama, will include titles, music and sound effects. iMovie offers a library of sounds that can be searched or browsed then dragged onto the timeline.	Why have you chosen that particular piece of music? What do you think that that sound effect adds to that clip?
4	Make props and a 3D sets. Produce a storyboard and a script for their movie.	Explain to the children they will now be making their own movie – this could be based on a theme you are currently doing in class or our suggestions is to base it around an Inventor. 1. Divide the children into groups (ideally 4 children to a group) and ask them work together to produce props, a set, a storyboard for their movie and a script. Explain to each group they will need to discuss an idea and then allocate tasks to each other. 2. Create a storyboard - A storyboard is a loose plan of what will happen, by whom and where. It should be a sequence of drawings along with some direction and dialogue/text. This can be amended as necessary but should be used to keep the film within the agreed parameters. 2. Create Props and a 3D background - Props play a big part in providing the familiar items associated with the scene. If a conversation is taking place in the living room then pictures on the wall, a TV in the corner, a vase of flowers on the shelf will help set the scene. Talk about proportion – if your characters are 3 inches tall then the vase of flowers need only be maybe an inch tall. Use bright colours as they tend to look faded during filming - good lighting will improve the quality. A 3D set is a good way of providing a background when filming models. A cardboard box works perfectly well and printed images, drawn pictures or coloured paper work equally well. It is important to spend time creating props and a set as this is an integral part of the animation process. 3. Produce a script – will this be a narration explaining what is happening or will there be dialogue within the text. *NB When you are creating an animation, audio is added after filming not at the same time.*	Can you talk me through your storyboard? Are you choosing to narrate your audio or are you going to add dialogue? Why? Have you considered the sizes of your set and props? Are they in proportion?
5		Continue to work on Props, storyboard and script	
6	Enhance animation using music	Using the I Can Animate App ask the children to record their movie – tell them to take two shots for each frame (like they did in session 2). Emphasise the need for only very slight	Why have you chosen to add that particular

and sound effects	movements between each shot otherwise it will appear as though characters are jumping around on the sets. Once the movie is recorded, import it into iMovie to add text, music and sound effects. Ask the children to experiment with music and audio, making use of sound effects to emphasise specific clips and music to create a feeling or mood. Once all groups have exported their final film they can all be collated into one project, sequenced accordingly and any additional titles and transitions applied before viewing as a group. The finished film can be uploaded onto your school website or reproduced on DVD. *NB Steamboat Willie is the first animation to apply 'synchronised sound' and was recorded live over the top in a studio using a real band and instruments. Discuss how this would be different today.*	piece of music? Why that sound effect? What does it add to the movie? What have you learnt about Stop Frame Animation? What would you do differently next time?

Further challenges and possible home learning activities:

Children could produce a 'publication' to compliment their movie. If they have produced a movie around an inventor they could create a newspaper report on the creation of the invention. If they have created their own they could produce a comic version of their story.

Alternative Apps/Software to those recommended

Week 2:
- Alternative to I Can Animate - http://stop-motion-animator.software.informer.com/1.1/ or http://monkeyjam.org/ (both free)

Week 3, 5 and 6:
- Alternative to iMovie app - Windows Movie Maker

Year 5 (Ref: 501)

Apptivity Name: Grand Designs (3D Designs)

Summary:

Learning about our built environment can help us understand so much about our history, culture and how buildings have shaped our society.

Over six sessions, children will be exploring drawings/illustrations representing both 2D and 3D worlds. The children will need to think about who they are designing their building for and other elements such as what materials they might use.

Useful link:
http://www.engagingplaces.org.uk/teaching%20resources/art81724

Key Computing Terminology:

SketchUp: 3D modelling software

Computing POS Reference:

- **IT2** - Use search technologies effectively
- **IT3 -** Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information
- **DL5 -** Use technology safely, respectfully and responsibly; recognize acceptable/ unacceptable behaviour; identify a range of ways to report concerns about content and contact

What is required?

Week 1:
- Internet access
- iPads with Book Creator
- Seesaw (available as an app or online)

Week 2:
- Graph Paper, Ruler and Pencil
- Handout Ref XXX
- iPads with Camera/Foldify
- See Presentation Ref 501.1
- Internet access
- Seesaw (available as an app or online)

Week 3:
- Presentation Ref 501.2
- Internet access
- iPads with Brushes and Toco builder
- Seesaw (available as an app or online)

Week 4:
- Internet access
- Laptops with Google Sketch-up
- Worksheet 1: See Sketch-up session 1 (Ref 501.3)
- Seesaw (available as an app or online)

Week 5:
- Internet access
- Laptops with Google Sketch-up
- Worksheet 2: See Sketch-up session 2 (Ref 501.4)
- Seesaw (available as an app or online)

Week 6:
- Internet access
- Laptops with Google Sketch-up
- Seesaw (available as an app or online)

eSafety
- Digital Citizenship and Technology 3.1

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Introduce thinking about their built environment. & research a building they like.	Introduce, how building are used and how design is functional not just aesthetic. Discuss what buildings they like to use and why…e.g Swimming baths, Football ground, Museums, Home….. Ask the children to research a building they like and find out who designed it, what the building was designed for, what the building is used for now, what materials have been used and what style is the build. e.g. St Luke's church also known as The Bombed Out Church is in Liverpool city centre. It was used as a church but was bombed in the Blitz in World War 2. Now it is used by community groups like Urban Strawberry Lunch, as a multi functional space for Yoga, Music events, film screenings etc. This building was designed by John Foster. Ask the children to create an e-Book in Book Creator and record their findings. Ask them to include a picture of their building. The children should then save their work and upload it to Seesaw (or other similar portfolio/blog/wiki).	Children learn about buildings they use. Research buildings they like. Produce an e-book
2	Exploring 2 and 3D environments part 1	On graph paper, using a ruler and pencil, ask the children to draw a house. See if any of the children have tried to draw using some 2 or 3 dimensions. Show the children how to draw a house in 3D (See handout Ref 501.1) and then ask the children try. Using an iPad, ask the children to take a photo of their drawings. Once they have taken the picture ask them to use the app 'Foldify' to mock-up their own house design. Discuss all three methods, and how they can help us to design in the real world. Using Presentation (Ref XXX), show the children different representations of a building, for example architect's plans, technical spec drawings, conceptual illustrations and explain the different uses of each representation. Ask the children to upload their drawing and Foldify file	Learn how to drawing 2 and 3D shapes Mock up a house in Foldify Understand why you would use different representations to show the same building.

		to Seesaw.	
3	Exploring 2 and 3D environment part 2	Think big…Show the class the presentation on grand designs (Ref 501.2) - this presentation illustrates how architecture can be used for function and style. Discuss what they have seen. Outline the following Design brief* to the class: As a young designer you have been asked to design a home for your idol e.g. Paloma Faith or Usain Bolt Ask the children to think about what type of home they would live in? How would you make it special for them? What materials would you use? Ask the children to sketch some ideas on paper or in Brushes. Then choosing one design, ask them to create it in Toco builder. Once finished ask the children to take screenshots of their finished building and upload their work to Seesaw. *The design brief could be changed to tie into the current class topic…E.g The Myans, Egyptians etc.*	Identify materials used to construct buildings and why they might be used. Use Toco Builder to design a house.
4	Introduce Google Sketch-up.	Introduce Google Sketch-up to the class. This software is quite technical and has lots of new tools that the children may not be familiar with so this session is about giving the children time to explore the functionality of the software. The children should open a new document and navigate around the space using the basic tools. The children should complete Worksheet 1: See Sketch-up session 1 (Ref 501.3)	Learn and test out tools in Sketch-up and be able to navigate in this space.
5	Design in Sketch-up.	This session consolidates learning so far and the children should continue using Google Sketch-up to design their building from session 3. Ask the children to complete Worksheet 2: See Sketch-up session 2 (Ref 501.4)	Design their building using Sketch-up.
6	Showcase Finished designs.	Provide children with time to finish their design in Google Sketch-up. Ask the children to present what they have designed and explain their ideas for their design.	Finish and showcase their design.

Further challenges and possible home learning activities:
N/A

Alternative Apps/Software to those recommended
Could use Pic Collage instead of Book Creator.

Year 5 (Ref: 502)

Apptivity Name: Earth and Space (Let's Explore Our Galaxy)

Summary:

In this apptivity children will be exploring the earth and space using technology. The apptivity is designed so children look at all the different aspects of space.

Key Computing Terminology:

Debug This is the process of finding errors or problems with your code and trying to fix it. Sometimes code will be in the wrong order or there could be bits of code missing, the process of fixing the code is called debugging.

Podcast Podcasts are shows, similar to radio or TV shows that are produced and posted to the Internet for download and listening or viewing.

QR Code A machine-readable code consisting of an array of black and white squares, typically used for storing URLs or other information for reading by the camera on a smartphone.

Computing POS Reference:

- **CS4 -** Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
- **IT3 -** Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information
- **DL5 -** Use technology safely, respectfully and responsibly; recognize acceptable/ unacceptable behaviour; identify a range of ways to report concerns about content and contact

What is required?

Week 1:
- iPads with to Astro App and MSQRD.
- Access to Story Bot Videos: https://www.youtube.com/watch?v=ZHAqT4hXnMw
- Mission Control & AR Presentation (Ref 502.1)

Week 2:
- iPads with access to Hopscotch.
- Hopscotch and Space Game Presentation (Ref 502.2)
- Hopscotch Game Instructions (Ref 502.3)
- Hopscotch Challenge Booklet (Ref 502.4)

Week 3:
- iPads with access to Hopscotch.
- Hopscotch Challenge Booklet (Ref 502.4)

Week 4:
- iPads with access to Hopscotch.
- Hopscotch Challenge Booklet (Ref 502.4)

Week 5:
- iPads with Audioboom
- Story Spine model (Ref 502.5)

Week 6:
- iPads with Audioboom
- Story Spine model (Ref 502.5)
- If completing extension activity, Book Creator or Tellagami.

We have also added an additional folder of Extra resources that may assist you in delivering this session.

eSafety
3.3 Gaming and collaboration 3.3

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Publishing Augmented Reality Set up personal space on display board and use QR codes to document learning.	**Set up mission control.** 1. Introduce the story of our galaxy by watching Story Bot Space Videos with the class: https://www.youtube.com/watch?v=ZHAqT4hXnMw For details how to do the following see presentation – Mission Control & AR (Ref 502.1) 2. Ask the children to make an Astronaut poster using Astro App. 3. Add QR Codes to each poster. 4. The children will produce an Astronaut video using the app MSQRD. The video will explore the galaxy and ask the children to include lots of facts about space based on the Story Bot videos.	L.O. Use AR to showcase learning What is augmented reality? What is a QR Code? Why would you use a QR Code?
2	Coding To become familiar with the coding environment and complete simple challenges.	**Coding with Hopscotch** 1. Demonstrate how to use Hopscotch coding app (see Hopscotch and Space Game Presentation – Ref 502.2). See also Hopscotch Game Instructions (Ref 502.3) 2. Invite the children to play and create. 3. Download, print and handout Coding with Hopscotch Challenge Booklet (Ref 502.4). In this session the children can tackle the shape challenges. 4. Ask the children to screenshot their work. This can either be uploaded to their pupil portfolios or printed for hard copy evidence.	Children are able to use coding blocks to program. What does that coding block do? What would happen if you removed that coding block? Does it have to follow this order? Why?
3	Coding To produce a solar system game and learn about debugging.	**Coding with Hopscotch** Ask the children to open the Coding with Hopscotch Challenge Booklet (Ref 502.4) and complete the Space Game. The children will need two sessions to complete their animation.	Children are able to program their own animation. What does that coding block do? What would happen if you removed that coding block? Does it have to follow this order?

			Why?
4	Coding To produce a solar system game and learning about debugging any problems	**Coding with Hopscotch (Continued)** Complete animation from previous session.	As Above
5	Podcasting Create a radio play about an alien coming to Earth. Act out, record and publish.	*NB. Prior to the session, the teacher must sign up for a free account at Audioboom. Then the children can log in and publish with that account.* **Podcasting with Audioboom** 1. Children to research and write a script based on the Story Spine model (Ref 502.5). 2. Rehearsal time maybe needed 3. After their script has been approved, ask the children to record and publish their podcast on Audioboom. 4. Published podcasts can then be embedded on school website The children will need two sessions to complete their animation.	Children are able to produce their own audio recording. What is a podcast? What else do you think you could record for a podcast?
6	Podcasting	**Podcasting with Audioboom (Continued)** Complete podcast from previous session.	As above.

Further challenges and possible home learning activities:
Using Book Creator or Tellagami ask the children to write a learning journey based on what they have done and learnt.

Alternative Apps/Software to those recommended
N/A

YEAR 6

Curriculum Links – YEAR 6:

Activity	Eng	Maths	Sci	PE	Art & Design	D&T	Geog	His	Music	PSHE	RE	MFL
Young Authors	X				X							
Stocks and shares		X										
Let's learn a language												
Appy Times Pt 1	X				X	X				X		
Appy Times Pt 2						X						
Heroes & Villains -Graphics					X							
Building Battle Bots			X			X						
The Ministry of Crazy Coding		X										

KS 2 – Y6 (Ref: 37)

Apptivity Name: Young Authors

Summary:

During this project, children will develop a story idea in small groups to create a storyboard. The children will then use Book Creator and Brushes to create their own eBook including text, illustrations and audio.

Key Computing Terminology:

eBook: an electronic version of a printed book which can be read on a computer or a specifically designed handheld device.

Storyboard: a sequence of drawings, representing the shots planned for a film.

Sequencing: A set of actions or events that must be carried out in the same order every time.

Computing POS Reference:

- **IT2** -Use search technologies effectively
- **IT3 -** Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information
- **DL5 -** Use technology safely, respectfully and responsibly; recognize acceptable/ unacceptable behaviour; identify a range of ways to report concerns about content and contact

What is required?

Week 1:
- Example websites:
  http://flavorwire.com/306958/the-20-most-beautiful-childrens-books-of-all-time
  http://www.inspiremonkey.com/2011/03/10-inspiring-and-amazingly-talented-children's-book-illustrators/
  http://www.imagesofdelight.com/illustrators_artwork.php
- *Teacher reference:*
  http://www.youtube.com/watch?v=GwkJF2rkzPo
- iPads with internet access for research
- iPad app - Brushes

Week 2:
- iPads
- App – Popplet

Weeks 3 - 5:
- *Teacher Reference:*
  http://www.youtube.com/watch?v=_wy2fXLBdvo and
  https://itunes.apple.com/us/book/young-authors/id796401843?ls=1&mt=11
- iPads
- App – Book Creator
- App - Brushes

eSafety
Not applicable

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Have an understanding of the use of illustration in children's books. Discuss the use of illustration in children's books. Children research illustrators and try and reproduce their own versions.	Children will create a children's book aimed at the KS1 age group. Show examples of children's books and in particular how illustration is used to help tell the story. Examples could include: Quentin Blake – Roald Dahl Axel Scheffler – The Gruffalo Eric Carle - The Very Hungry Caterpillar • http://flavorwire.com/306958/the-20-most-beautiful-childrens-books-of-all-time • http://www.inspiremonkey.com/2011/03/10-inspiring-and-amazingly-talented-children's-book-illustrators/ • http://www.imagesofdelight.com/illustrators_artwork.php Discuss how the use of images can add a new level of storytelling. Demonstrate how to use Brushes including trace and image, brush styles etc. If you are unsure how to use Brushes see - http://www.youtube.com/watch?v=GwkJF2rkzPo Ask children to research illustrators that they like using the websites above. They must choose one illustrator and save a picture of their work to their iPad. Ask the children to use Brushes and trace this image using layers. Ask the children to use the most appropriate brush to suit their illustrator's style. Ask the children to save their work.	Children can identify illustrations and their importance. What is an illustration? How have you been able to recreate that illustration? What is a layer? How do you change your brush stroke/ colour/ texture?
2	Children to plan their own story. Children generate a mind map detailing their ideas.	Tell the children they are going to create a book aimed at younger (year 3 or 4 for example) children and tell them their book must include a building, a mysterious animal and a secret. To help the children with making sure they fit their book to their audience discuss how language is important, look at the language used in books such as 'The Gruffalo'. Children can help pick out the describing words and maybe think of some alternative words to use.	Children have a plan for their story and have produced a storyboard to refer back to. Why have you used a storyboard?

	Children produce a storyboard and structure tools.	Ask the children to create a mind map to help generate ideas using Popplet. Introduce the idea of storyboards and how they help plan what needs to be done. Ask all children to create a storyboard with a complete narrative. This storyboard will illustrate how sequencing works as the story must be in a certain order to make any sense.	
3	Children to complete their storyboard. Introduce children to the Book Creator app.	Ask all children to finish their storyboard. Demonstrate how to use the app 'Book Creator' to create an eBook. There is a demonstration here if you are unsure how to use it - http://www.youtube.com/watch?v=_wy2fXLBdvo Show the children how to create a new eBook and show them how to change the font, size and colour. In addition, show the children what a finished book (including audio) looks like when published to iBooks. Here is an example of an eBook published as part of Knowsley CLCs Young Author competition: https://itunes.apple.com/us/book/young-authors/id796401843?ls=1&mt=11 Explain to the children that they will also need to use the 'Brushes' app to add illustrations to their books. Using this app children can download pictures from the internet and trace drawings - avoid allowing them to just copy and paste pictures straight into their book - make sure they are their own work.	Children should have a clear idea of the story they are going to publish. Book Creator – What Font are you using? Why that font? What style have you chosen for your front cover? Will that make it standout? Brushes – What's a layer? Why would you use layers?
4	Create book and illustrate.	Children to continue creating their eBook.	
5	Children to add audio and publish their books.	Give children a final opportunity to make any amendments, check spelling and punctuation as advised by teacher. Demonstrate how to record audio in Book Creator. Children to record their audio (preferably in a quiet area) using the record feature. By asking the children to record their stories it means younger children will be able to listen to them and develop their own reading skills. Ask each child to publish and save their finished eBook.	Books are published. How do you add audio? Why are we adding a recording?
6	Show tell and feedback	Ask the children how their books compare to their storyboard? Does it follow the storyboard or have they changed their story once they started writing? Show children a story mountain. Can they identify each of the components within the book?	Children present their eBooks and evaluate their performance.

		Children present their finished eBooks to the class and provide a brief evaluation of any issues they encountered and any top tips they discovered.	

Further challenges and possible home learning activities:

Link to an MFL - ask the children to write their story in another language or ask them to record their story in another language.

Ask the children to produce a sequel to their book.

Alternative Apps/Software to those recommended

Week 2:
- Alternatives to Popplet – Flowol (MS Windows) or MS Word/ PowerPoint or simply pen and paper

Weeks 3 – 5:
- Alternatives to Book Creator - MS Publisher or Comic Life
- Alternatives to Brushes – Paint

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KS 2 – Y6 (Ref: 38)

Apptivity Name: Stocks and Shares

Summary:

This apptivity is designed to give children an understanding of the stock market but more importantly engage them in a task that makes them analyse data, make informed choices, present and critique their decisions. It has been designed to bring together all their 'office' skills and show how they can be used to complement each other.

Key Computing Terminology:

Not applicable

Computing POS Reference:

- **DL5 -** Use technology safely, respectfully and responsibly; recognize acceptable/ unacceptable behaviour; identify a range of ways to report concerns about content and contact

What is required?

Weeks 1-6:
- 'Stocks and Shares' presentation (Ref 38.1)

Weeks 1, 4 and 5:
- Stocks and Shares Worksheet (Ref 38.2)

Week 2:
- List of companies – (Ref 38.3)

Weeks 2 - 6
- Laptops/Tablets with Internet access

Week 3
- PowerPoint

Week 4:
- White board for presentation
- http://www.halifaxfantasytrader.co.uk/fantasytrader

Week 6:
- MS Excel

eSafety
Not applicable

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Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Introduce children to stocks and shares Children to interpret data presented to them	**Class discussion:** What is the stock market? What are stocks and shares? Open the 'Stocks and Shares' presentation (Ref 38.1) and run through this with the whole class as a carpet time discussion. The presentation outlines the basic workings of the stock market. Once you have completed this presentation ask children to complete the worksheet 'Reading the market' within the Stocks and Shares Worksheet (Ref 38.2)	Do children have an understanding of stocks & shares?
2	Children develop an understanding of how stocks are bought and sold Children to research share prices	**Class discussion:** Recap on what the stock market is and what a stock is. Open the 'Stocks and Shares' presentation (Ref 38.1) and find lesson 2 within the presentation. Explain to the children that when buying shares you can only buy whole shares. Ask the children how many shares they could buy for the companies shown in the presentation. Explain to the children that they are going to be split into groups and given money to invest into companies and that they will monitor the company's performance over the next 4 weeks. Discuss with the children what companies they know, where do they shop/ what are their favourite brands etc. Write their answers on the board and then limit the companies they are able to invest in to those. Alternatively, you could provide them with a 'list of stock companies' (ref 38.3) and let them choose from them. Ask the children to research the companies and the value of the shares (simplest way is to Google the name of the company and share price and they'll find their way to relevant information)	Why would somebody buy shares? How would you find a company's share price?
3	Children to decide where to invest their money Children to	**Class discussion:** Recap on what the stock market is and what a stock is. Open Presentation 'Stocks and Shares' (Ref 38.1) and find lesson 3.	Children will develop presentation skills Why have you chosen to invest in that

	create a presentation explaining their reasons for their investment	Explain to the children that they are going to need to prepare a 'pitch' to present to the whole class including what companies they are investing their money in and why. This pitch should include a PowerPoint presentation to help share the information they find.	company?
4	Children to deliver their 'pitch' to the class to explain their investment strategy	Each group to deliver the pitch for where they would like to invest their money. Next, the groups must complete the stock market portfolio transaction sheet within the Stocks and Shares Worksheet (Ref 38.2) and submit to the class teacher. Within these worksheets there is also a monitoring proforma which can be used to record daily/weekly share prices of their investments which will help with their final report.	
5	Children to monitor and record their investments performance. Children to decide whether to change their investment strategy or continue with it.	**Class Discussion:** Pick one of the investments made by the children and look at the performance of the investment. Ask the children questions such as what is the share price now, has it increased or decreased, should they sell their shares and invest elsewhere or leave their money in the investment? Open Presentation 'Stocks and Shares' (Ref 38.1) and find lesson 5. Groups must now consider whether to sell or stick with their investments. For each investment, ask the children to document why they are selling or sticking as they will include this information in their final report. If any of the children want to sell their shares they need to complete the Selling Shares form within the Stocks and Shares Worksheet (Ref 38.2).	Children will learn to analyse data to make informed decisions. Why have you chosen to sell/ stick with your shares? Has the price increased or decreased? What was the price last week and what is it this week?
6	Children to evaluate the performance of their investment.	Open Presentation 'Stocks and Shares' (Ref 38.1) and find lesson 6. For this final week children are to sell all of their shares at the current selling price and see what the total value of their share is. Using Microsoft Word & Microsoft Excel ask each group to produce a report evaluating this investment. Ask the children to include graphs mapping the value of their shares across the period of the investment.	Children will produce a report summarising their investment. What is the total value of your investment? Which stocks did you make money/ lose money on?

Further challenges and possible home learning activities:

Extend the activity over a longer period – this could even be over the year/ full term asking the children each week to consider their investments and acting accordingly.

Alternative Apps/Software to those recommended

Week 3:
- MS PowerPoint – use Keynote (Mac or iPad)

Week 6:
- MS Excel - use Numbers (Mac or iPad)
- MS Word - use Pages (Mac and iPad)

KS 2 – Y6 (Ref: 39)

Apptivity Name: Let's Learn A Language

Summary:

By year 6 it is anticipated that the children will have prior experience of coding using a visual based programming language, such as Scratch or Kodu but this is likely to be the first time they will code using a scripting language i.e. writing lines of code as opposed to dragging blocks to build algorithms and programs. The aim of this apptivity is to introduce children to the world of programming languages, of which there are many. They will experiment with learning some basic Python code using either iPads, PC or Macs.

Objectives:
- To discover the importance of coding.
- To learn the basics of coding in Python.

Key Computing Terminology:

Python: Is an object-oriented coding language, meaning everything in the program is treated as an object.

Computing POS Reference:

- **CS4** - Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts

What is required?

Week 1:
- https://www.youtube.com/watch?v=Vxv0-sggnqA
- Additional/optional activity: Video camera

Week 2:
- Access to laptops/tablet devices
- http://learn.code.org

Week 3:
- Access to laptops/tablet devices with http://www.crunchzilla.com/code-monster

Week 4 - 6:
- Access to laptops/tablet devices with Python installed: Python 2.7 app or Python is free here: http://www.python.org/download/ (Please select Python 2.7.6 for either Windows or Mac.)
- http://www.pythoncode.co.uk/poem-challenge-extra

Further activity:
- Access to iPads with Hakitzu Elite
- Teacher reference: http://kuatostudios.tumblr.com/post/73521009721/hourofcodeathalcyoninternational-schoolguest

eSafety
Not applicable

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Children are introduced to coding and the job of a coder.	As we are going to be learning coding and a little of a programming language we will need to start with firstly explaining not just what coding is, but all the amazing things it can do. We will also need to shake off some of the misconceptions so that people see that coding is accessible, fun and exciting. Lets start by watching this video, which will lead to a class discussion. "Is coding the most important language in the world." https://www.youtube.com/watch?v=Vxv0-sggnqA Class Discussion: Ask the children the following questions: • What things did they say and show to change people's understanding of coders and coding? • Can you list as many cool places you can work or cool jobs you can have that use coding? For example, if you are a coder you could help build the newest playstation game, you could write code to improve a music sharing site like Spotify or you could write code that helps doctors diagnose illnesses. **Additional/optional activity:** Ask the children to record their responses to the questions: • What is code? • What can you do with it? • Why is it so important? These videos can be uploaded to the class blog if you have one or perhaps the school website.	Understand that coding is the use of programming languages to make games, programs and computers things. Understand that there are many different types of possibilities. Can you summarise what coding is in one clear sentence? What sort of people do we think code?
2	Children will learn about Javascript.	Learn.Code.org is a fantastic website that allows children to learn Javascript by using lots of familiar faces like Angry Birds and Plants Vs. Zombie characters. There are also lots of videos between stages presented by famous coders including Mark Zuckerburg and Bill Gates.	Children will explore different coding apps and websites. What did we learn?

		Choose an appropriate challenge for the children and ask them to complete it: http://learn.code.org	
3	Children will write and adapt programmes using Javascript.	Tell the children they are going to use Javascript, which is another object-oriented computer programming language commonly used to create interactive effects within web browsers/sites. If you are using PCs/Macs - ask the children to open the following website and begin the challenges: **Code Monster:** http://www.crunchzilla.com/code-monster	Children are able to sample and complete Javascript challenges. What is Javascript and how can it be used? Which one do you prefer Python or Javascript and why?
4	Children will write and adapt programmes using Python.	**Teacher reference:** Use the website below to find introduction videos, and lesson plans to teaching the Python programming language. A different section from this site will be used each week. http://www.pythoncode.co.uk/home **With the children:** Introduce Python to the children, "we are going to be learning about a programming language called Python. It can be used to make all manner of games and applications." If possible each child will need a PC/Mac/iPad with Python installed - either use the iPad app or download the software from http://www.python.org/download/. The Poem Challenge 1-3: Ask the children to complete challenges 1 – 3 at the following website: http://www.pythoncode.co.uk/poem-overview The children learn to open and save python files, how to use the print command, the run function and about a simple variable.	Children can open and save Python files. Children understand 'Print' command Children understand that the term 'Debug' means to fix code or solve a problem with code. Children understand the 'Run' button plays the code. What is Python? What in a simple sentence does the 'Print' command do? What does 'Debug' mean? What is a variable?
5	Children will write and adapt programmes using Python.	The Poem Challenge 4-6: Ask the children to complete challenges 4 – 6 at the following website: http://www.pythoncode.co.uk/poem-overview	Children understand the input command. Children can use the random command and understand it's function. What is an input?

			How does the random command work?
6	Children will write and adapt programmes using Python.	The Poem Challenge Extra: Ask the children to complete the independent challenges located here: http://www.pythoncode.co.uk/poem-challenge-extra	Children are able to work independently to solve coding problems. What did you find most challenging?

Further challenges and possible home learning activities:

See alternative App suggestion (Hakitzu Elite) below.

Alternative Apps/Software to those recommended

Week 3: If you would prefer to use iPads then you could use the following app:

Hakitzu Elite - it is a great app that gets students to use javascript to help battle their friends. The app is available on iPad and Anrdoid. The children can follow the tutorials to learn how to use the app and learn simple elements of Javascript.

You can read more about this app here:
http://kuatostudios.tumblr.com/post/73521009721/hourofcodeathalcyoninternationalschool-guest

KS 2 – Y6 (Ref: 40)

Apptivity Name: Appy Times Part 1

Summary:

There is a revolution coming and it is called 'wearable technology' which is clothing incorporating computer and advanced electronic technologies. This wearable technology craze has begun and it's not going to slow down anytime soon. In fact, a new report revealed that wearables will have a major impact on our everyday lives over the next decade.

So the children's task is to design a piece of wearable technology that links in with a smart phone app. Their app in some way must improve learning in schools.

Key Computing Terminology:

Storyboard A sequence of drawings, representing the shots planned for a film.

Computing POS Reference:

IT3 - Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information

What is required?

Week 1:
- http://www.bbc.co.uk/news/business-26224428
- https://www.youtube.com/watch?v=dYzlWWa8dCU
- http://www.apple.com/uk/ipod/nike/
- Pen and paper

Week 2:
- Reclaimed materials such as yogurt pots, cereal and other food boxes, plastic cartons, plastic bottles and milk top lids
- OR Flip chart paper
- Camera

Week 3:
- http://www.apple.com/uk/ipod/nike/
- https://econsultancy.com/blog/64170-20-stunning-examples-of-minimal-mobile-ui-design#i.z0psj47znfjntg
- http://www.hongkiat.com/blog/mobile-app-ui/
- Teacher choice: Software that can be used:
  PC - PowerPoint, Paint, Photoshop
  iPad: Popplet, iDraw, iMockups, Adobe Ideas

Weeks 4-5:
- Flip cam/video camera
- Windows Movie Maker or iMovie app
- Teacher reference:
  http://windows.microsoft.com/en-gb/windows-vista/getting-started-with-windows-movie-maker
- http://www.unf.edu/uploadedFiles/aa/cirt/events/materials/imovietutorialfinal.pdf

eSafety
Not applicable

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Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Children learn about wearable technology and develop an initial idea for their own wearable technology.	**Tell** the children they are going to develop the next big thing. Currently apps are the big thing. For example, Flappy Bird (mobile-phone game) was making as much as $50,000 (£30,000) a day for its developer before he removed it from online stores. It took him just two or three days to write: http://www.bbc.co.uk/news/business-26224428 The next big thing will be technology that you wear which links to apps. Get the children to watch this video on Wearable technology to start a classroom discussion: https://www.youtube.com/watch?v=dYzlWWa8dCU Here is one example that is already out there and used a lot. Nike + iPod/iPhone app: http://www.apple.com/uk/ipod/nike/ Ask: Can you think of any other examples? What do you think? Divide the children into groups and ask them to think of a name for their group (like they do in BBC 1's The Apprentice). Ask each group to brainstorm ideas for wearable technology. It must be something that can be used in school to help learning and it must have an app to collect the data or control the clothing. They can use pen and paper for this exercise. Set 30 minutes for this task. Tell the children they must choose one idea by the end to develop further by the end of the session.	Children understand the concept of wearable technology. Children develop an initial idea for wearable technology. What is wearable technology in one simple sentence?
2	Children design their idea using 'junk.'	*Prior to this task, ask the children to bring in any reclaimed materials such as yogurt pots, cereal and other food boxes, plastic cartons, plastic bottles and milk top lids to use to model their idea.* Ask the children to work on the design of their wearable technology (decided in the previous session). This is called prototyping - designers make prototypes to test their creations or apps to find faults and improve their ideas. Children can design their idea using Junk modeling	Children understand the concept of prototyping and how this is done. Why is prototyping important?

		- the children use various pieces of 'Junk' to create something exciting and original using their imaginations. As an alternative they can do life size drawings of clothes using flip board paper. Ask the children to take photographs of their finished product.	
3	Children to create a mock up of their interface.	Users will need to interact with the wearable technology in order to control or access the information from the clothes. For this you need an app! Remember the example of Nike+. http://www.apple.com/uk/ipod/nike/ Ask the children to create a storyboard which details the app's interface (also known as a HCI - Home-Computer-Interfaces). The interface will be made up of buttons, sliders, voice control etc that a user would use to control the built in app. In their storyboard, they will need to detail how the app works, what happens when you press certain buttons, how information is sent and displayed. Show the children examples of Interface Designs such as: • https://econsultancy.com/blog/64170-20-stunning-examples-of-minimal-mobile-ui-design#i.z0psj47znfjntg • http://www.hongkiat.com/blog/mobile-app-ui/ To complete this task, the children could use software such as: PC - PowerPoint, Paint, Photoshop iPad: Popplet, iDraw, iMockups, Adobe Ideas	Children understand that the HCI - Home-Computer-Interfaces are the means by which you control and interact with apps. Children produce an interface design that sets out the function of their app. What is HCI and why are they important?
4	To develop skills in managing and manipulating images, audio and video	Start with a class discussion: What makes a good advert for a product? During this task, children will need to produce an advert to demonstrate the functionality of their design so that the audience or user can easily grasp its purpose. As the school is used as a context for the use of the wearable technology, then the children might wish to role-play situations as to where/how it will be used to form the basis of their advert. Now ask the children to create a script for their advert. In their advert, they can use photographs of their prototype from session two and use their storyboard from session three to make sure they	Children will develop skills in managing and manipulating images, audio and video. What makes a good advert of a product? How could you make your advert better next time?

		include everything about what their wearable technology can do. Next, each group must record their video. Once they have filmed their advert, each group must import their video in to either Windows Movie Maker or the iMovies app to edit their final advert and add some music. If you have not used this software before, here are two useful tutorials: http://windows.microsoft.com/en-gb/windows-vista/getting-started-with-windows-movie-maker iPad iMovies http://www.unf.edu/uploadedFiles/aa/cirt/events/materials/imovietutorialfinal.pdf	
5	Complete their video.	Children may need additional time to finish their videos from the previous session. For those that have finished, they can start to create and rehearse their pitch for the next session.	As above
6	Class presentation	This is the session where all the hard work and creativity of the children can be showcased. Each group to deliver a short sales pitch 'selling' their app and clothing to the class. Then play their video to the class. The class can then vote on the best app/wearable technology. Additional options: Videos can be uploaded to the school website as a further showcase. Invite parents to the showcase and include them in the vote. You could also invite a guest to present a small prize for the winning app/wearable technology.	Children are able to present their ideas. Why did you vote for that particular app/wearable technology?

Further challenges and possible home learning activities:

Continue on to 'Appy Times Part 2'

Alternative Apps/Software to those recommended

Not applicable

KS 2 – Y6 (Ref: 41)

Apptivity Name: Appy Times Part 2

Summary:

In this apptivity we will give children the chance to experiment with the basics of programming and app development using a variety of development platforms and styles of code. Then as an overall plenary they will be asked to compare, contrast and express their thoughts on the different programming styles of languages.

Key Computing Terminology:

Visual programming: any programming language that lets users create programs by manipulating program elements graphically rather than by specifying them textually.

Computing POS Reference:

CS4 - Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts

CS5 -Use sequence, selection, and repetition in programs; work with variables and various forms of input and output

IT3 - Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information

DL4 -Be discerning in evaluating digital content

What is required?

Week 1:
- https://www.youtube.com/watch?v=nKIu9yen5nc
- https://www.youtube.com/watch?v=8vXgjfBmzFs
- Laptops with internet access to http://light-bot.com/hoc.html
- **OR** iPads with Light Bot

Week 2:
- https://www.youtube.com/watch?v=VQ4Io6Huylc
- Laptops with internet access to http://learn.code.org/flappy/1

Week 3:
- Laptops with internet access to www.touchdevelop.com/hourofcode2
- Additional activities - Ref 41.1 folder

Week 4:
- Laptops with internet access to https://www.makegameswith.us/build-an-ios-game-in-your-browser/

Week 5:
- Laptops with internet access to http://appinventor.mit.edu/explore/ai2/beginner-videos.html
- Additional activities - Ref 41.2 folder

eSafety
Not applicable

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Children will learn the fundamentals of visual coding and problem solving.	Start by showing the children this video "What Most Schools Don't Teach" – This is a video that promotes the use of code by some very successful coders (who the children will be familiar with): https://www.youtube.com/watch?v=nKIu9yen5nc **Ask:** "What do you think are the most important reasons why we should learn coding?" Next show the video "Learning to Code, Coding to Learn : Jonathan Buchanan at TEDxToledo" – Jonathon is a 10year old coder https://www.youtube.com/watch?v=8vXgjfBmzFs **Ask:** "what do you think are the most valuable skills you can gain from learning to code? Which of these skills can you use, even if you never choose to code again?" **Introducing Light-Bot:** This is an app that teaches the fundamentals of visual coding and problem solving. See how many levels the children can complete. Follow this link to play online: http://light-bot.com/hoc.html *Alternatively, if you have iPads, this app is free and can be downloaded from the app store.*	Children understand the importance of code and the opportunities that exist. Children have experimented with visual coding using Light-Bot. Would you like to learn to code your own apps? What did you think about visual coding in Light-Bot?
2	Children will learn how to create their own Flappy game.	**Code your own 'Flappy' Game** Watch this video with the class: https://www.youtube.com/watch?v=VQ4lo6Huylc Ask the children to open the following website in their browser: http://learn.code.org/flappy/1 The website demonstrates a method of visual coding with drag and drop blocks. It is part of the Hour of Code scheme backed by the DfE. Demonstrate the first few stages and then let the children try it for themselves.	Children can follow a coding tutorial to achieve complex outcomes using visual programming. How does this style of visual coding (with blocks) differ from Light-Bot? How did you learn that task?

		Remind the children: "Don't forget that with coding you often learn by making mistakes. If you get stuck, ask a friend. There' s also a 'Need help?' button with videos and hints."	
3	Children create a game guided by an online tutorial using Touch Develop.	Visit Touch Develop's Hour of Code site. On this site you can build a series of different games: www.touchdevelop.com/hourofcode2 Touch Develop is an online site that can be used to develop apps for iPads, Android and Windows devices. You can choose to register if you wish but this is not necessary. Ask the children to try one of the following tutorials: • Monster Slicer • Bubble Popper • Falling **Additional activities (Ref 41.1 folder):** This folder includes worksheets to extend the children's knowledge of this platform and will help them in building their own app.	Children able to follow a coding tutorial to achieve complex outcome using visual programming. How does this style of visual coding differ from making the flappy bird game?
4	Children will use Xcode to make a simple game.	In this session, the children will attempt to use some basic Xcode (this is the programming language used to create iPad/iPhone apps). Ask the children to go to this link: https://www.makegameswith.us/build-an-ios-game-in-your-browser/ Ask the children to type in their first name when prompted. The site will then guide the children through a short guide to the site and how to use it before introducing the coding tutorial. In the tutorial, the children will use simple Xcode to make a game which they will preview in a simulator.	Children are able to follow the coding tutorial to achieve complex outcomes using an advanced programming language. How does this style of written coding differ from using Touch Develop?
5	Children will create a simple app for Android.	Using one of the tutorials from the site below, children will learn the basics of programming apps for Android: http://appinventor.mit.edu/explore/ai2/beginner-videos.html Ask the children to try one (or more if you have time) of the following tutorials: • TalkToMe Text-to-Speech App • Extended TalkToMe App: Shake! • BallBounce Game App • DigitalDoodle Drawing App **Additional activities (Ref 41.2 folder):** This folder includes worksheets to extend the children's knowledge of this platform and will help them in building their own app.	Children are able to follow the coding tutorial to achieve complex outcomes using an advanced programming language. How does this style of coding differ from using Xcode?

| 6 | Compare and Contrast. | Ask the children to compare the different sites/programming languages that they have used over the previous sessions. Ask them:

 • What did you think of coding?
 • Was it easier or harder than you thought it would be?
 • Would you like to learn more about coding? | |

Further challenges and possible home learning activities:

Ask the children to try the tutorials in either session 3 and/ or 5 that they were not able to in class.

Alternative Apps/Software to those recommended

Not applicable

KS 2 – Y6 (Ref: 42)

Apptivity Name: Heroes and Villains – Graphics

Summary:

This project will take you through the steps to create your own Heroes and Villains style game using the program Scratch. As the hero of the game you will battle against the villain to collect diamonds and destroy each other's health. The aim of the game is to either be the first to collect 5 diamonds or destroy the villain's health to 0.

Key Computing Terminology:

Sprites: a sprite is a 2D image that is integrated into a computer game in a layered effect.

Conditional Language/Statement: can also be described as a *Conditional Expression,* they are features of coding that perform different computations or actions depending on a specified condition being either *True* or *False.* For example using the **if then else** construct, **If** t*he following Condition* is *True* **Then** do t*he following instructions* **Else** *do these different instructions*.

Looping: a loop is a sequence of instructions that will be continually repeated until a ***Conditional Statement*** is reached or becomes true. Using loops is a way of asking a question until something (*conditional statement*) becomes true.

Variables: variables are used to store information within computer code, each Variable will have a unique name and it will hold a known or unknown quantity or value. For example the number of points scored by each player would be stored in a variable.

Broadcasting
Broadcasting is a way of communicating information to the user (player) to inform them of what is happening. For example *broadcasting* who has won the game.

Computing POS Reference:

- **CS4** – Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.
- **CS5** – Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.
- **IT3** – Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.

What is required?

Weeks 1-6:
- Guide to Scratch – Ref 42.1
- Scratch

eSafety
Not applicable

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	What is Scratch?	Open the resource "Guide to Scratch" (Ref 42.1). Explain "What Scratch is?" and how it is used and how the class is going to be using it. Explain and demonstrate the Scratch User Interface and show how blocks of code are built to control a sprite. Give the children the opportunity to explore the user interface and to start building blocks of code that will affect the sprite in some way. Demonstrate First Scratch Program from the "Guide to Scratch" and allow the children to recreate that program. Ask them to complete Challenge 1 from the "Guide to Scratch"	Understand what Scratch is and the user interface. Can build blocks of code. Can edit code to meet a new requirement. What is Scratch? How are blocks of code built?
2	Sprites	Open the resource "Guide to Scratch" (Ref 42.1). Explain to the children what Sprites are? Guide the children through Challenge 2 from the "Guide to Scratch." Demonstrate to the children how to draw your own character in scratch and then ask them to draw their own sprite this way. Demonstrate to the children how to import sprites from the Scratch library and ask them to then import another sprite this way. Demonstrate that sprites are independent objects that can move on their own and have their own separate code blocks. Ask the children to experiment with code blocks and add different blocks of code for each sprite.	Understand what sprites are. Can design their own sprites/graphics. Can import sprites/graphics from a library into a program. Can add background images on the stage. What is a Sprite? What is a Stage? How do you change the background in Scratch?

		Explain **The Stage** to the children and show them how to change the background of the stage to a different image and allow them to change their background image. Using the "Game Tutorial" go through the **Introduction** which will set out the game they are about to create and **Step 1**. Then allow them to do this for themselves. Adding in 4 sprites, 1 Hero, 1 Villain, 1 Collectable Item and 1 Superhero Power. Depending on time they could create their own or use the graphics supplied with the tutorial. Save the project to continue with next time.	
3	Input and Animating	Open the resource "Guide to Scratch" (Ref 42.1). Explain why we have user input and the different examples of user input available. Demonstrate an example of **Basic User Input** using Scratch. Guide the children through Challenge 2 from the "Guide to Scratch" Demonstrate an example of **Loops** using Scratch. Guide the children through Challenge 3 from the "Guide to Scratch" Demonstrate an example of using **Random Numbers** in Scratch. Guide the children through Challenge 4 from the "Guide to Scratch" Ask the children to open their save project from last week and using the "Game Tutorial" go through **Step 2** allowing them to go through it themselves. Save the project for next time.	Can write code that will accept user input. Can write code that uses a loop and understand how a loop works. Can make sprites move in a variety of ways. Can make sprites disappear and reappear randomly. Can generate random numbers. What is an input? What are loops? How do you use Random Numbers?
4	Introducing Variables	Open the resource "Guide to Scratch" (Ref 42.1). Explain to children **What a variable is?** Demonstrate how to create variables in Scratch. User the What are Variables? Document in	Can create a variable. Can understand that a variable is used to store information. What is a variable?

		the resources folder. Guide the children through Challenge 5 from the "Guide to Scratch" Ask the children to open their save project from last week and using the "Game Tutorial" go through **Step 3** allowing them to go through it themselves. Save the project for next time.	
5	Sensors	Open the resource "Guide to Scratch" (Ref 42.1). Explain and demonstrate what Sensors are and how they are used in Scratch. Guide the children through Challenge 6 from the "Guide to Scratch." Explain and demonstrate Sounds and how they are used in Scratch. Guide the children through Challenge 7 from the "Guide to Scratch" Ask the children to open their save project from last week and using the "Game Tutorial" go through **Step 4** allowing them to go through it themselves. Save the project for next time.	Can use sensors to detect interaction. Can import and manipulate sounds into a game Can manipulate variables How do you use sounds?
6	Conditional Statements and Operators	Open the resource "Guide to Scratch" (Ref 42.1). Explain and demonstrate what Conditional Statements are and how they are used in Scratch. Guide the children through Challenge 8 from the "Guide to Scratch" Ask the children to open their save project from last week and using the "Game Tutorial" go through **Step 5** allowing them to go through it themselves. Save the project and play the game.	Can use conditional statements to determine an outcome. Can use operators to determine an outcome of a conditional statement. Can broadcast a message to the user. What are conditional statements?

Further challenges and possible home learning activities:

Ask the children to produce their own glossary for Computer Science terms, one that could be used with younger children.

Alternative Apps/Software to those recommended

Not applicable

Year 6 (Ref: 601)

Apptivity Name: Building Battle Bots

Summary:

The children will use Physics engines and prototyping software to build and test a virtual robot. Algodoo is a unique 2D-simulation software. Children can design in a playful, cartoon manner, making it the perfect tool for creating and exploring physics whilst building amazing inventions. Children will work in pairs as part of a design team to create a robot that will save the world by battling a world issue like climate change.

Key Computing Terminology:
N/A

Computing POS Reference:

- **CS4** – Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.
- **IT3 –** Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.
- **DL5 -** Use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concerns about content and contact

What is required?

Week 1:
- Internet access
- Laptops/iPads for research
- Presentation (Ref 601.1)
- Seesaw (available as an app or online)

Week 2:
- Internet access
- Laptops/iPads for research
- iPads with Explain everything
- Seesaw (available as an app or online)

Week 3:
- Internet access
- iPads with 123D Design app
- Presentation (Ref 601.2)
- Seesaw (available as an app or online)

Week 4:
- Internet access
- iPads with Algodoo
- Access to Algodoo Video: https://www.youtube.com/watch?v=qXsdJlvnlPA
- Seesaw (available as an app or online)

Week 5:
- iPads with Algodoo
- Seesaw (available as an app or online)

Week 6:
- iPads with Algodoo
- Screen recording app such as Screen Recorder Lite or Reflector.
- Keynote
- Seesaw (available as an app or online)

eSafety
- Digital Citizenship and Technology 3.1 & 3.8

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Introduce the battle bots save the world project.	*"It only takes one idea to save the world"* Design Brief: working in pairs over the next 6 weeks you have to design and build a virtual robot that could save the world from one of the following world issues: • diseases, • famine, • An environmental issue of their choosing • Or a local issue. Be clear from the outset that weapons are not allowed to be designed. Show presentation about robots design (Presentation Ref 601.1). Think of materials you could use that would make your robots fit for the job. Discuss what would make a good battle Bot, what would they need to be successful, what attributes would they need? In pairs, ask the children to do some independent internet research about their chosen world issue. Ask the children to write/draw ideas on flip chart paper and keep for their next session. Ask the children to take a photo and upload it to Seesaw (or other similar portfolio/blog/wiki) for evidence.	Discuss design brief start generating ideas. Why have you chosen that issue? Why have you chosen those materials? Is that a sustainable resource you are making that robot from? Present initial ideas based on internet research.
2	Reflect and inform design and develop a plan.	In pairs, give the children time to complete some more research to find out if other technology is available similar to what they have planned e.g. a water irrigation bot/machine or a robot to detect diseases? Using the Explain Everything app, the children will draw their Bot and explain what it is made from and what special skills it has to save the world. Ask the children to name their bot. Save it as a video and upload to Seesaw.	Children can take a considered approach to developing an idea. Children are able to Create an Explain Everything video.
3	Produce a technical	Recap what they learnt from last session. Show presentation (Presentation Ref 601.2) and ask the	Produce a technical

	drawing.	children to decide if they want to design Top-Down vs. Bottom-Up. Again, in pairs ask the children to produce a technical drawing of their bot using 123D Design app. This process will help inform the build next week. Children need to consider the materials they intend to use at this stage. Take a screenshot of their drawing and upload it to Seesaw.	drawing. Why have you taken that approach? What are the benefits of the Bottom-Up approach? What are the benefits of Top Down approach?
4	Build and test simple bot in Algodoo.	Demonstrate how to use Algodoo (Watch video https://www.youtube.com/watch?v=qXsdJlvnlPA). This app is designed for children to design, construct and explore the world of physics. Children can use boxes, circles, polygons, gears, ropes and chains to build their bot as well as test it using gravity, friction, recitation, refraction. Give the children time to familiarise themselves with the tools and to build and test a simple prototype bot.	Prototype bot in Algodoo. What have you chosen that approach to building your robot? Why have you chosen those materials? So you think those materials are durable?
5	Build bot Algodoo.	The big build…. in their pairs, the children will use this session to build their bot in Algodoo based on the technical drawing they produced in session 3. Ask the children to save their work and upload to Seesaw.	Build their bot in Algodoo. How have you created that? Can you talk me through the process of creating you robot? Are you happy with the final design?
6	Finish and test bot showcase and present results.	The children should now test their finished bot. They should record the test using a Screen Recording App such as Screen Recorder Lite or Reflector (or record it from another iPad).	Record test and feedback to class. What would you do differently

		The finished recording can be placed in Keynote along with some notes on how they would improve their bot based on the test. Children can then present their Keynote to the whole class for feedback.	next time? How could you improve your robot? Have you created what you planned to create? Are there any other purposes you could use your robot for?

Further challenges and possible home learning activities:

Build a virtual robot step by step in a virtual environment:
http://www.mind.ilstu.edu/curriculum/virtual_robotics_lab/lab.html

Alternative Apps/Software to those recommended
Week 6: PowerPoint or any similar software/app that allows the children present their work.

Year 6 (Ref: 602)

Apptivity Name: The Ministry of Crazy Coding (We are Game Developers)

Summary:
We will be using Python programming to develop a game. Python is a programming language named after Monty Python the surrealist comedy group. Python is simple and easy to learn compared with other languages like Java and C++. Python is logical code, and is good for making games and dynamic websites like Scratch.

Children may have done some visual coding before using Scratch or Hopscotch but during this session children will be starting from scratch.

Basic tutorials can be found here using Python coding test grounds
https://www.codecademy.com/learn/python

You will need the application CodeRunner
https://coderunnerapp.com or Free on-line editor
http://www.pythontutor.com/live.html#mode=edit

It is expected for this lesson that the children already know how to draw, film and animate on an iPad.

Key Computing Terminology:
Python: Is an object-oriented coding language, meaning everything in the program is treated as an object.

Computing POS Reference:
- **CS4** – Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.
- **IT2** - Use search technologies effectively
- **IT3** – Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.

- **DL4 -** Be discerning in evaluating digital content
- **DL5 -** Use technology safely, respectfully and responsibly; recognize acceptable/ unacceptable behaviour; identify a range of ways to report concerns about content and contact

What is required?
Week 1:
- Internet access
- Presentation (Ref 602.1)
- Access to
  https://www.youtube.com/watch?v=pvAsqPbz9Ro
  https://www.youtube.com/watch?v=Fkd9TWUtFm0
- Coding Tips - Python unit (Ref 602.2)

Week 2:
- Laptops with Internet access
- Access to
  http://www.pythontutor.com/live.html#mode=edit
- Python Basic Course (Ref 602.3)

Week 3:
- Laptops with Internet access
- Python Basic Course (Ref 602.3)

Week 4:
- Laptops with Internet access
- Python Basic Course (Ref 602.3)

Week 5:
- Internet access
- Laptops or iPads with Python
- GuessMyNumber_final.txt (Ref 602.4)

Week 6:
- Internet access
- Laptops or iPads with Scratch
- Guess my cupcake scratch project (Ref 602.5)

eSafety
- Digital Citizenship and Technology 3.1 & 3.6

Let's get started

Weeks (1 hour lesson)	Lesson Aim	Lesson Summary	Lesson Outcomes and Assessment Opportunities
1	Introduce Python and basic rules.	Tell the children that they will be learning how to program a game using Python. Explain that Python is a computer language. "Like humans, computers use multiple languages to communicate — in this case, programming languages. A programming language is simply a particular way to talk to a computer". Show Presentation (Ref 602.1) Watch https://www.youtube.com/watch?v=pvAsqPbz9Ro https://www.youtube.com/watch?v=Fkd9TWUtFm0 Discuss the clips which introduce what coders do and why children should learn how to program. Websites that use Python include Drop-box, Instagram and Pinterest. Python allows more dynamic ways to present content and interact with it. We will learn to code by designing a game. Start by introducing some basic coding rules, see Coding Tips - Python unit (Ref 602.2) which includes top tips on how to be a good coder.	Discuss what code is for. Develop an understanding of how humans program computers. Understand the reasoning behind coding rules.
2	Complete sections 1-6 of Python basic course document.	Using laptops, ask the children to open http://www.pythontutor.com/live.html#mode=edit Using the Python basic course document (Ref 602.3), ask the children to complete sections 1-6. The children will type the commands in red.	Execute common commands. Type in code. Debug code. Run program.
3	Complete sections 7-12 of Python basic course document.	Recap last weeks session Using the Python basic course document (Ref 602.3), ask the children to complete sections 7-12. This session looks at how Python can be use to calculate maths problems. Introduce comments, that help you understand and debug your code.	Execute common commands Type in code Debug code Run program

4	Complete sections 13-19 of Python basic course document.	Recap last weeks session Using the Python basic course document (Ref 602.3), ask the children to complete sections 13-20. This lesson looks at structuring their project and how modules can be used to import extra code.	Execute common commands Follow instructions Debug code Run program
5	Code Game	Recap last weeks session Take children through Python code (GuessMyNumber_final.txt Ref 602.4). Ask children to run the program to test Save the game for next week	Execute common commands Type code Debug code Run program
6	Develop Game	Recap last weeks session Using Scratch ask the children to recreate their game, Guess the number of. This time, the children can choose their background and sprite that match the theme they chose. Notice the same language used in python such as variables, random range and operators. See Guess my cupcake scratch project (Ref 602.5)	Discuss game parameters Children develop own game Debug code Run program Children present work to class

Further challenges and possible home learning activities:
N/A

Alternative Apps/Software to those recommended
N/A

Resources Reference List

Activity Ref	Lesson	Resource(s) Needed	Resource Reference
Reception: eSafety	Trust	Who can you share information with (flashcards)	R1
1	1	What is a Computer presentation	1.1
	2-3	Photograph examples of Junk modelling	1.2
	4	Keyboard and mouse control games list	1.3
	5	'Paint packages' presentation	1.4
2	1&2	Flash Cards	2.1
3	2	Hungry Caterpillar Video	3.1
	4	Hungry Caterpillar Flash Cards	3.2
4	1	Art & Artist presentation	4.1
	2 – 5	My Favourite Thing presentation	4.2
	Ext	Using QR Code Video	4.3
6	1	What is an email presentation	6.1
	2	How to set up class emails presentation	6.2
	3	Email worksheet	6.3
	4	Let's get mailing presentation	6.4
9	1 - 6	Robot Game Introduction with appendices	9.1
	1	Directional Flash cards	9.2
	2	Robot Mask	9.3
	2	Maze Diagram	9.4
	3	Robot Worksheet	9.5
10	1&2	Flash Cards	10.1
12	1	Watch My Neighbourhood	12.1
	3	Modelling the WWW	12.2
	6	Connected eBook presentation	12.3
13	2	How to set up class emails	13.1
		Let's get mailing	13.2
	4 – 6	Edmodo Video Tutorial	13.3
	6	Adding an Assignment	13.4
14	1	Teacher Guide to Sketch Nation Shooter	14.1
	3	Teacher Guide to Sketch Nation Studio	14.2
15	1	Weather Pictogram worksheet	15.1
	2	Ice Cream worksheet	15.2
	2	Ice Cream flash movie	15.3
	3	Worksheet	15.4
17	1	Web 1.0 and 2.0 Presentation	17.1
18	1-5	Lets Fix It – Lesson Guide	18.1
	3 – 6	Problems 1 – 8	Ref 18 folder
	2 – 5	Activity Videos	Ref 18 folder
19	2	Web 1.0 and 2.0 Presentation	19.1
	2	List of Communication Tools	19.2
22	1	Get Up Algorithm presentation	22.1
	2	Spot the Algorithm presentation	22.2
	3	Let's Present the Game	22.3
	4-5	Inputs	22.4
	4	How to use Hopscotch	22.5

	5	How to use Hopscotch part 2	22.6
23	6	Flowchart Symbol Reference Card	23.1
24	1 - 6	My First Program – Lesson Guide	24.1
25	2	Flowchart Symbol Reference Card	25.1
	3 – 6	A video introduction to Minecraft	25.2
27	2	Edmodo Video Tutorial	27.1
28	1 - 6	Making Games Lesson Guide	28.1
		Activities 1 – 6	Ref 28 folder
29	4 - 6	iMovie Tutorial guide	29.1
		Editing video with iMovie	29.2
30	1 - 6	HTML Interface Design – Lesson Guide	30.1
		Activities 1 - 6	Ref 30 folder
31	1 - 6	Racing Cars – Lesson Guide	31.1
		Activities 1 - 11	Ref 31 folder
32	1	Site Map Example	32.1
34	1	Introduction presentation	34.1
	3	Mona Lisa - QR code.pdf	34.2
		Scanning your First QR Code video	34.3
		Making QR Code video – ref	34.4
	4	Shooting and editing video	34.5
	6	Teaching with Aurasma video	34.6
35	1 - 6	Code Breakers	35.1
	2 - 3	Code Crackers Worksheet	35.2
36	1 - 2	Stickman instruction sheet	36.1
38	1 - 6	Stocks and Shares Presentation	38.1
	1 - 5	Stocks and Shares Worksheet	38.2
	2	List of companies	38.3
41	3	Additional Activities folder	41.1
	5	Additional Activities folder	41.2
42	1-6	Guide to Scratch	42.1

New resources added (2016)

Activity Ref	Lesson	Resource(s) Needed	Resource Reference
101	1	Additional Video - Google Maps Tutorial Video	N/A
		Additional Video - Smart online Search Tips for Kids	N/A
		Additional Video - Simple Google Search Tips	N/A
	4	Maps and Toys	101.1
	5	Worksheet	101.2
102	2-5	Ready, Steady, Go Presentation	102.1
	2	RSG Teacher Guide	102.2
201	1	Worksheet	201.1
	1	Google Search Tips	201.2
	1	Smart Online Search Tips	201.3
	1	Google Maps Tutorial	201.4
	2	Foldify lesson presentation	201.5
	3	Instructive video	201.6
	3	Using Foldify handout	201.7

	3	QR Code Poster	201.8
	5	Using Shadow Puppets EDU	201.9
	5	Using Telligami in class	201.10
202	1	Presentation	202.1
301	1	Going for Gold Template	301.1
	2	Presentation	301.2
	3	Presentation	301.3
	4	Presentation	301.4
	5	NHS Infographic	301.5
302	1-5	Young Coders learner's booklet	302.1
401	1	Disney/Pixar story spine	401.1
	1	Disney/Pixar story spine (QR Code link to above)	401.1
	1-5	We are Game Makers Project Book	401.2
	1	Scratch Jr Character and Setting Sheet (2 documents)	401.3
402	3	Making a music video presentation	402.1
501	2	Presentation	501.1
	3	Presentation	501.2
	4	Worksheet 1: See Sketch-up session 1	501.3
	5	Worksheet 2: See Sketch-up session 1	501.4
502	1	Mission Control & AR Presentation	502.1
	2-4	Hopscotch and Space Game Presentation	502.2
	2-4	Hopscotch Game Instructions	502.3
	2-4	Hopscotch Challenge Booklet	502.4
	5 - 6	Story Spine model	502.5
601	1	Presentation	601.1
	2	Presentation	601.2
602	1	Presentation	602.1
	1	Coding Tips - Python unit	602.2
	2-4	Python Basic Course	602.3
	5	GuessMyNumber_final.txt	602.4
	6	How many cupcakes can I eat	602.5

Glossary

This is a glossary of terms in the computer science context – the words may sometimes (but not always) have different meanings in other contexts.

Abstraction Reducing complexity by focusing on the essential features of an algorithm or data representation and omitting unnecessary detail.

Algorithm An algorithm is a sequence of instructions and/or set of rules.

Animation Animation is a way of creating a continuous motion and shape change of your graphic or sprite.

Artificial Intelligence Artificial Intelligence (**AI**) is the behaviour of a computer independently of a human. Computer games have artificial intelligence built into them in order to make the game much more interesting.

Application A self-contained program that performs a specific function for end users.

Augmented Reality A technology that superimposes a computer-generated image on a user's view of the real world, thus providing a composite view.

Binary Code A computer language to express the digital information they process. It is called binary because it consists of two symbols – 0s and 1s.

Blogging A personal website/webpage which an individual records opinions, links to other sites, etc. on a regular basis.

Boolean logic / digital logic A system of reasoning with truth values, true and false, using logical operations such as and, or, and not. Named after British mathematician George Boole.

Browser A piece of software that enables a user to locate, retrieve and display information on the world wide web.

Central Processing Unit (CPU) This is the part of the computer that turns your commands in actions

Code These are the instructions used to write a computer program. Different pieces of code can be arranged in different ways to give the computer a set of instructions.

Complexity The way that a solution to a problem scales as the size of the input increases, considering both the number of computational steps and the memory space required.

Computation Performing a calculation by executing the instructions of a program on a computational device.

Computational device / digital device A computer or other programmable device that performs computation.

Computational thinking The ability to analyse ways to solve problems using appropriate algorithms and data representations, taking account of the complexity of possible solutions.

Computer Program A computer program is a sequence of instructions written to perform certain tasks by the computer. It's a way of talking to the computer to ask it to do things for you.

Computer science The scientific study of computation, applied to both hardware and software, covering both theoretical and practical concerns.

Computational thinking It is a way of thinking that uses concepts and theories from computer science to solve problems.

Conditional Language Can also be described as a *Conditional Expression,* they are features of coding that perform different computations or actions depending on a specified condition being either *True* or *False.* For example using the ***if then else*** construct, **If** t*he following Condition* is *True* **Then** do t*he following instructions* **Else** *do these different instructions*.

Conditional Statements Can also be described as a *Conditional Expression,* they are features of coding that perform different computations or actions depending on a specified condition being either *True* or *False.* For example using the ***if then else*** construct, **If** t*he following Condition* is *True* **Then** do t*he following instructions* **Else** *do these different instructions*.

Control In ICT Terms, this means the commands placed in a sequence to perform a desired task.

CPU This is the part of the computer that turns your commands in actions

Data Information which can be stored, retrieved and manipulated in digital form using digital devices.

Data representation The various ways data can be represented as words, numbers and pictures in the memory of a computational device.

Debug This is the process of finding errors or problems with your code and trying to fix it. Sometimes code will be in the wrong order or there could be bits of code missing, the process of fixing the code is called debugging.

Decipher Convert (a text written in code, or a coded signal) into normal language

Decomposition Also known as *factoring*, refers to the process by which a complex problem or system is broken down into parts that are easier to conceive, understand, program, and maintain.

Digital artifacts / digital content Images, videos, text or data, or a combination of these, which are made on a digital device.

Directional language Forwards, backwards, left and right.

Digital literacy The ability to access and manipulate digital content and understand the implications of its creation and distribution.

eBook An electronic version of a printed book which can be read on a computer or a specifically designed handheld device.

Elements: Elements are like tags but they contain the information about the web page. A element will sit inside a tag.

eMail: This is a digital letter Messages distributed by electronic means from one computer user to one or more recipients via a network.

E-safety Understanding and applying rules to mitigate against the risks to personal safety and privacy of personal information in using digital devices of all kinds.

Flipcam A HD camcorder

Flowchart A diagram of the sequence of movements or actions

Function A small section of computational code that performs a specific operation. In particular, a function takes inputs, or arguments, and returns outputs, or results.

Garageband Software application that allows users to create music or podcasts

Green screen (in film and video) A subject is filmed in front of a green background which allows a separately filmed background/image to be added to the final video in the editing phase.

Hardware Physical items of computing kit such as desktop hard drives, printers and scanners

HTML Web pages are files that are viewed using an internet browser. The pages are written in a language called HTML. HTML is made up of elements, or tags, that are used as instructions to tell the browser what should appear on a web page and how it should be structured. HTML stands for HyperText Markup Language.

Infographic Visual representation of information, that can be very complex, displayed in a way that can be interpreted quickly and easily.

Input: Inputs are devices or code that send instructions to the computer and allows us to interact with technology. These are the means of communicating with computers e.g. keyboard and mouse.

Internet An electronic system that connects billions of people using computers, phones, or other devices, and allows them to communicate with one another

Jingles A short slogan, verse, or tune designed to be easily remembered used in advertising.

Logic A systematic approach to reasoning. The rules that underlie an algorithm used for an application. Can also refer to digital components in computer hardware.

Looping A loop is a sequence of instructions that will be continually repeated until a *Conditional Statement* is reached or becomes true. Using loops is a way of asking a question until something (*conditional statement*) becomes true.

Memory This is the name for the electronic holding place for instructions and data that a computer's microprocessor can reach quickly.

Message Something you want to tell or ask another person

Mind map A mind map is a diagram used to visually outline information. A mind map is often created around a single word or text, placed in the centre, to which associated ideas, words and concepts are added.

Mnemonic A system such as a pattern of letters, ideas, or associations which assists in remembering something.

Musical Loops A repeating section of sound material

Network A number of computational devices connected together, allowing sharing of resources and cooperation between devices in the solution of a problem. Also the hardware used to establish connections between devices on a network.

Operating system The program that enables the computer to start and access different sorts of software on the computer, examples include Microsoft Windows and iOS for Mac.

Output These are the means by which the computer relays information e.g. printer or monitor

Peripherals These are the external accessories to computers such as printers.

Player Interaction Player interaction is the main point of all the computer games. If the player cannot interact with the game or control something within a game they simply won't play the game.

Podcast Podcasts are shows, similar to radio or TV shows that are produced and posted to the Internet for download and listening or viewing.

Procedure A small section of computational code that performs a specific operation. Unlike a function, a procedure does not return a result but may be to change the data stored in objects in computer memory.

Program / code (verb) To create or modify a program.

Program / code (noun) A sequence of instructions to perform a task.

Programming language A formal language for representing statements, or commands, and data values used in a program. A programming language has a precise syntax that defines the valid ways for combining the symbols used to denote variables and data values. Examples used on schools include Scratch, Python and SmallBASIC.

Python Is an object-oriented coding language, meaning everything in the program is treated as an object.

QR Code A machine-readable code consisting of an array of black and white squares, typically used for storing URLs or other information for reading by the camera on a smartphone.

Search technologies Algorithms used by applications known as search engines to trawl the internet for digital content matching search terms given by a user. Results are normally presented in the form of links to relevant content.

Selection It means 'to choose something'.

Sequence A set of actions or events that must be carried out in the same order every time.

Simple Program A sequence of instructions to perform a task.

Simulation The technique of representing the real world by a computer program

SketchUp is 3D modeling software

Software The programs that enable computers to undertake specific functions.

Stop motion is an animation technique that physically manipulates an object so that it appears to move on its own. The object is moved in small increments between individually photographed frames, creating the illusion of movement.

Storyboard A sequence of drawings, representing the shots planned for a film.

Structure HTML files need to have a structure or order to them in order for them to be understood by the internet browser to display the web page. If the structure is wrong then the web page won't display correctly.

Sprite A sprite is a 2D image that is integrated into a computer game in a layered effect.

Tags Tags are what the HTML language uses as instructions to tell in the internet browser what should appear on the web page. Tags look like this *<head> </head>*. They will always have an opening tag and closing tag.

Variables Variables are used to store information within computer code, each Variable will have a unique name and it will hold a known or unknown quantity or value. For example the number of points scored by each player would be stored in a variable.

Visual programming Any programming language that lets users create programs by manipulating program elements graphically rather than by specifying them textually.

Wiki A website developed collaboratively by a community of users, allowing any user to add and edit content.

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